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In cooperation with
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Station and Indiana
Department of Natural
Resources, Division of Soil
Conservation and State
Soil Conservation Board

Soil Survey of Owen County, Indiana



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How To Use This Soil Survey

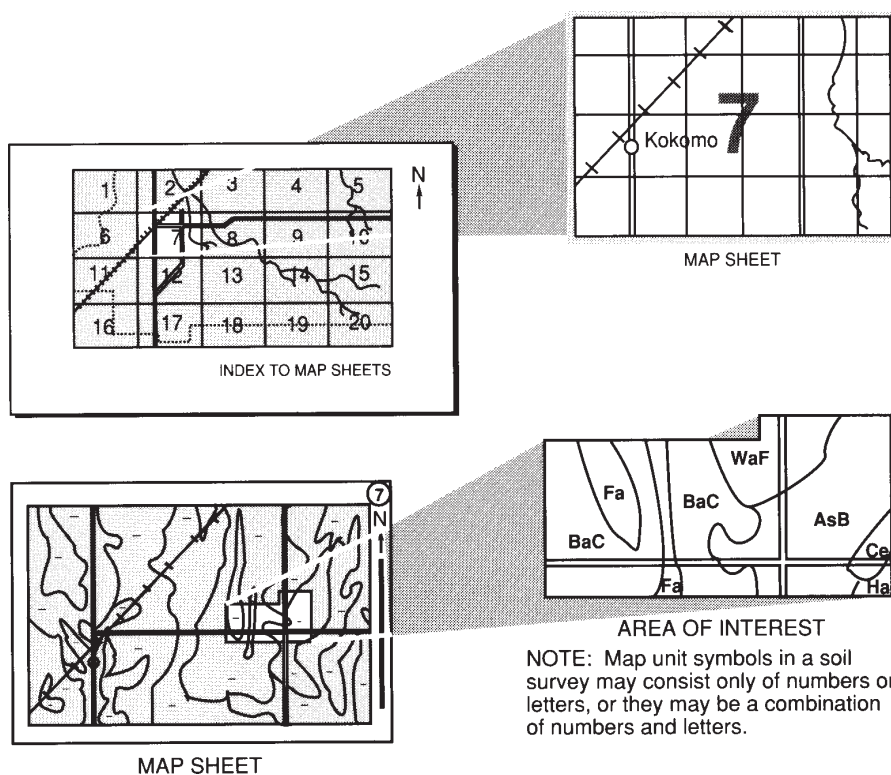
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1995. Soil names and descriptions were approved in 1997. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1995. This survey was made cooperatively by the Natural Resources Conservation Service and the Purdue University Agricultural Experiment Station. It is part of the technical assistance furnished to the Owen County Soil and Water Conservation District.

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Cover: The land use and soils in Owen County are quite variable. The highland in the foreground is an area of Ava soils. In the valley below is an area of Oldenburg soils, which are in cropland and pasture. In the background, are areas of Dubois and Haubstadt soils in cropland and Solsberry and Hickory soils in woodland.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service homepage on the World Wide Web. The address is <http://www.nrcs.usda.gov>.

Contents

How To Use This Soil Survey	3
Foreword	11
General Nature of the Survey Area	13
History and Development	13
Physiography, Relief, and Drainage	14
Climate	14
How This Survey Was Made	15
Detailed Soil Map Units	17
AbgAU—Adrian muck, undrained, 0 to 1 percent slopes	18
AfeC—Alvin-Bloomfield loamy sands, 6 to 12 percent slopes	18
AfeD—Alvin-Bloomfield loamy sands, 12 to 18 percent slopes	18
AffE—Alvin-Bloomfield-Princeton complex, 18 to 25 percent slopes	19
AfsB—Alvin-Princeton fine sandy loams, 2 to 6 percent slopes	19
AfsC—Alvin-Princeton fine sandy loams, 6 to 12 percent slopes	19
AftD—Alvin-Princeton sandy loams, 12 to 18 percent slopes	20
AhrAK—Armiesburg silty clay loam, 0 to 2 percent slopes, occasionally flooded, brief duration	21
AkeB2—Arney silt loam, 2 to 6 percent slopes, eroded	21
AloB2—Ava silt loam, 2 to 6 percent slopes, eroded	21
AmkA—Ayrshire fine sandy loam, 0 to 2 percent slopes	21
BdxAV—Belknap silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration	22
BgeAH—Birds silt loam, 0 to 1 percent slopes, frequently flooded, brief duration	22
BodAV—Bonnie silt loam, 0 to 1 percent slopes, frequently flooded, very brief duration	23
CkkB2—Cincinnati silt loam, 2 to 6 percent slopes, eroded	23
CkkC2—Cincinnati silt loam, 6 to 12 percent slopes, eroded	23
CkkC3—Cincinnati silt loam, 6 to 12 percent slopes, severely eroded	23
CkkD2—Cincinnati silt loam, 12 to 18 percent slopes, eroded	24
CkkD3—Cincinnati silt loam, 12 to 18 percent slopes, severely eroded	24
CspC2—Crider silt loam, 6 to 12 percent slopes, eroded	24
CspC3—Crider silt loam, 6 to 12 percent slopes, severely eroded	25
DfnA—Dubois silt loam, 0 to 2 percent slopes	25
EaaD2—Ebal silt loam, 12 to 18 percent slopes, eroded	25
GaaE2—Gallimore loam, 18 to 25 percent slopes, eroded	25
GabG—Gallimore-Chetwynd complex, 25 to 70 percent slopes	26
GblAH—Gessie silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	26
GmcD3—Grayford silt loam, 12 to 18 percent slopes, severely eroded	26
GmcE2—Grayford silt loam, 18 to 25 percent slopes, eroded	26
GmhD2—Grayford-Ryker silt loams, 12 to 18 percent slopes, eroded	27
GmpE2—Greybrook silt loam, 18 to 25 percent slopes, eroded	27
GmpF—Greybrook silt loam, 25 to 35 percent slopes	27
HarD2—Haggatt silt loam, 12 to 18 percent slopes, eroded	28
HarD3—Haggatt silt loam, 12 to 18 percent slopes, severely eroded	28
HasE2—Haggatt-Caneyville silt loams, 18 to 25 percent slopes, eroded	28
HccA—Haubstadt silt loam, 0 to 2 percent slopes	28
HccB2—Haubstadt silt loam, 2 to 6 percent slopes, eroded	29
HccC3—Haubstadt silt loam, 6 to 12 percent slopes, severely eroded	29
HcgAH—Haymond silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	29
HchA—Haymond silt loam, sinkhole, 0 to 2 percent slopes	29

HefG—Hickory loam, 45 to 70 percent slopes	30	MvrAH—Moundhaven loamy fine sand, 0 to 2 percent slopes, frequently flooded, brief duration	36
HelD2—Hickory-Stinesville silt loams, karst, hilly, eroded	30	NbhAH—Newark silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	36
HeoE—Hickory silt loam, 18 to 25 percent slopes	30	OfaAV—Oldenburg silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration	36
HeoE3—Hickory silt loam, 18 to 25 percent slopes, severely eroded	30	OfcAV—Oldenburg fine sandy loam, sandy substratum, 0 to 2 percent slopes, frequently flooded, very brief duration	36
HeoG—Hickory silt loam, 25 to 70 percent slopes	31	OfeB—Olephant silt loam, 1 to 3 percent slopes	37
HepG—Hickory-Adyeville complex, 35 to 60 percent slopes	31	OmkC2—Otwell silt loam, 6 to 12 percent slopes, eroded	37
HesG—Hickory-Chetwynd loams, 35 to 70 percent slopes	31	OmkC3—Otwell silt loam, 6 to 12 percent slopes, severely eroded	38
HeuE—Hickory-Wellston silt loams, 18 to 25 percent slopes	32	OmkD3—Otwell silt loam, 12 to 18 percent slopes, severely eroded	38
HeuF—Hickory-Wellston silt loams, 25 to 35 percent slopes	32	PbbC2—Parke silt loam, 6 to 12 percent slopes, eroded	38
HkaB—Hollybrook silt loam, 1 to 5 percent slopes	32	PbbC3—Parke silt loam, 6 to 12 percent slopes, severely eroded	38
HleAV—Holton silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration	33	PbbD2—Parke silt loam, 12 to 18 percent slopes, eroded	39
HnoA—Hoosierville silt loam, 0 to 1 percent slopes	33	PbbD3—Parke silt loam, 12 to 18 percent slopes, severely eroded	39
LnfA—Lieber silt loam, 0 to 2 percent slopes	33	PcnA—Patrickburg silt loam, 0 to 2 percent slopes	39
LnfB—Lieber silt loam, 2 to 4 percent slopes	33	PcrAQ—Pekin silt loam, 0 to 2 percent slopes, rarely flooded	39
MecA—Martinsville loam, 0 to 2 percent slopes	34	PcrB2—Pekin silt loam, 2 to 6 percent slopes, eroded	40
MecAQ—Martinsville loam, 0 to 2 percent slopes, rarely flooded	34	PcrC2—Pekin silt loam, 6 to 12 percent slopes, eroded	40
MecB—Martinsville loam, 2 to 6 percent slopes	34	PhaA—Peoga silt loam, 0 to 1 percent slopes	40
MhhAH—McAdoo silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	34	PhaAP—Peoga silt loam, ponded, 0 to 1 percent slopes	40
MhhAK—McAdoo silt loam, 0 to 2 percent slopes, occasionally flooded, brief duration	34	PlcAV—Piankeshaw silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration	41
MhuA—McGary silt loam, 0 to 2 percent slopes	35	PlfA—Pike silt loam, 0 to 2 percent slopes	41
MrcG—Minnehaha silty clay loam, 35 to 75 percent slopes	35	PlfB2—Pike silt loam, 2 to 6 percent slopes, eroded	42
MsvA—Montgomery silty clay loam, 0 to 1 percent slopes	35		

Pml—Pits, quarry	42	SupAH—Stonelick sandy loam, 0 to 2 percent slopes, frequently flooded, brief duration	49
PrwAV—Pope fine sandy loam, 0 to 2 percent slopes, frequently flooded, very brief duration	42	SwhG—Stubenville-Hickory complex, 35 to 70 percent slopes	49
PryB—Potawatomi silt loam, 1 to 3 percent slopes	42	TadA—Taggart silt loam, 0 to 2 percent slopes	50
PsaD3—Pottersville silt loam, 12 to 18 percent slopes, severely eroded	43	TahB—Tapawingo and Nawakwa silt loams, 2 to 8 percent slopes	50
PsaG—Pottersville silt loam, 25 to 50 percent slopes	43	TcgG—Tipsaw-Rock outcrop complex, 35 to 70 percent slopes	50
PsbF—Pottersville silt loam, karst, steep	43	TtaG—Tulip-Tipsaw complex, 25 to 60 percent slopes	51
Rnn—Riverwash	43	TtcE—Tulip-Wellston-Adyeville silt loams, 18 to 25 percent slopes	51
RpzG—Romona-Corydon-Rock outcrop complex, 35 to 60 percent slopes	43	Uaa—Udorthents, cut and filled	52
RtcC3—Ryker silt loam, 6 to 12 percent slopes, severely eroded	44	VdgA—Vigo silt loam, 0 to 2 percent slopes	52
SfoA—Shakamak silt loam, 1 to 3 percent slopes	44	WeaA—Wea, sandy substratum-Elston complex, 0 to 2 percent slopes	52
SfyB2—Shircliff silt loam, 2 to 6 percent slopes, eroded	44	WeaAQ—Wea, sandy substratum-Elston complex, 0 to 2 percent slopes, rarely flooded	53
SfyC2—Shircliff silt loam, 6 to 12 percent slopes, eroded	45	WhfD2—Wellston silt loam, 12 to 18 percent slopes, eroded	53
SneC2—Solsberry silt loam, 6 to 12 percent slopes, eroded	45	WlmAK—Whitaker loam, 0 to 2 percent slopes, occasionally flooded, brief duration	53
SneC3—Solsberry silt loam, 6 to 12 percent slopes, severely eroded	45	WokAH—Wilbur silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	53
SneD2—Solsberry silt loam, 12 to 18 percent slopes, eroded	45	WolAI—Wilhite silty clay, 0 to 1 percent slopes, frequently flooded, long duration	54
SneD3—Solsberry silt loam, 12 to 18 percent slopes, severely eroded	46	WomAH—Wilhite silty clay loam, 0 to 1 percent slopes, frequently flooded, brief duration	54
SneD5—Solsberry silt loam, 12 to 18 percent slopes, gullied	46	WprAQ—Wirt loam, 0 to 2 percent slopes, rarely flooded	54
StaAV—Steff silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration	46	WpuAK—Wirt silt loam, 0 to 2 percent slopes, occasionally flooded, brief duration	54
StdAH—Stendal silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	47	WpuAV—Wirt silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration	55
StfB2—Stinesville silt loam, 2 to 6 percent slopes, eroded	47	WpyBJ—Wirt-Pekin silt loams, 0 to 6 percent slopes, frequently flooded, very long duration	55
StfC2—Stinesville silt loam, 6 to 12 percent slopes, eroded	47		
StgC2—Stinesville-Ryker-Grayford silt loams, karst, rolling, eroded	48		
StgD2—Stinesville-Ryker-Grayford silt loams, karst, hilly, eroded	49		

ZamB2—Zanesville silt loam, soft bedrock substratum, 2 to 6 percent slopes, eroded	56	Water Features	82
ZamC2—Zanesville silt loam, soft bedrock substratum, 6 to 12 percent slopes, eroded	56	Soil Features	83
ZamC3—Zanesville silt loam, soft bedrock substratum, 6 to 12 percent slopes, severely eroded	56	Classification of the Soils	85
ZamD2—Zanesville silt loam, soft bedrock substratum, 12 to 18 percent slopes, eroded	57	Soil Series and Their Morphology	85
ZamD5—Zanesville silt loam, soft bedrock substratum, 12 to 18 percent slopes, gullied	57	Adrian Series	85
ZapD3—Zanesville, soft bedrock substratum-Tulip silt loams, 12 to 18 percent slopes, severely eroded	57	Adyeville Series	86
Use and Management of the Soils	59	Alvin Series	87
Interpretive Ratings	59	Armiesburg Series	88
Rating Class Terms	59	Arney Series	88
Agronomy	59	Ava Series	90
Cropland Limitations and Hazards	62	Ayrshire Series	91
Pasture Limitations and Hazards	63	Belknap Series	92
Estimated Yields per Acre	64	Birds Series	92
Pasture and Hayland Interpretations	65	Bloomfield Series	93
Land Capability Classification	65	Bonnie Series	94
Prime Farmland	66	Caneyville Series	94
Windbreaks and Environmental Plantings	66	Chetwynd Series	95
Forestland	67	Cincinnati Series	96
Forestland Management and Productivity	67	Corydon Series	97
Recreation	68	Crider Series	97
Wildlife Habitat	70	Dubois Series	98
Hydric Soils	71	Ebal Series	99
Engineering	72	Elston Series	100
Building Site Development	72	Gallimore Series	101
Sanitary Facilities	73	Gessie Series	102
Waste Management	76	Grayford Series	102
Construction Materials	76	Greybrook Series	103
Water Management	77	Haggatt Series	104
Soil Properties	79	Haubstadt Series	105
Engineering Index Properties	79	Haymond Series	106
Physical Properties	80	Hickory Series	107
Chemical Properties	81	Hollybrook Series	108
		Holton Series	108
		Hoosierville Series	109
		Lieber Series	111
		Martinsville Series	112
		McAdoo Series	113
		McGary Series	114
		Minnehaha Series	114
		Montgomery Series	115
		Moundhaven Series	116
		Nawakwa Series	117
		Newark Series	117
		Oldenburg Series	118

Olephant Series	119	Climate	157
Otwell Series	124	Plant and Animal Life	157
Parke Series	125	Relief	158
Patrickburg Series	126	Time	158
Pekin Series	128	Processes of Soil Formation	160
Peoga Series	128	References	161
Piankeshaw Series	130	Glossary	163
Pike Series	130	Tables	179
Pope Series	131	Table 1.—Temperature and Precipitation	180
Potawatomi Series	132	Table 2.—Freeze Dates in Spring and Fall	181
Pottersville Series	133	Table 3.—Growing Season	181
Princeton Series	134	Table 4.—Acreage and Proportionate Extent of the Soils	182
Romona Series	135	Table 5.—Main Limitations and Hazards Affecting Cropland	185
Ryker Series	136	Table 6.—Main Limitations and Hazards Affecting Pasture	193
Shakamak Series	136	Table 7.—Land Capability and Yields per Acre of Crops and Pasture	201
Shircliff Series	138	Table 8.—Prime Farmland	208
Solsberry Series	139	Table 9.—Windbreaks and Environmental Plantings	210
Steff Series	140	Table 10.—Forestland Management and Productivity	224
Stendal Series	141	Table 11.—Recreation	246
Stinesville Series	141	Table 12.—Wildlife Habitat	257
Stonelick Series	143	Table 13.—Building Site Development	267
Stubenville Series	143	Table 14.—Sanitary Facilities	281
Taggart Series	144	Table 15.—Construction Materials	294
Tapawingo Series	145	Table 16.—Water Management	306
Tipsaw Series	146	Table 17.—Engineering Index Properties	319
Tulip Series	147	Table 18.—Physical Properties of the Soils	350
Vigo Series	148	Table 19.—Chemical Properties of the Soils	366
Wea Series	150	Table 20.—Water Features	382
Wellston Series	150	Table 21.—Soil Features	390
Whitaker Series	151	Table 22.—Classification of the Soils	396
Wilbur Series	152		
Wilhite Series	153		
Wirt Series	153		
Zanesville Series	154		
Formation of the Soils	157		
Factors of Soil Formation	157		
Parent Material	157		

Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described, and information on specific uses is given. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

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Soil Survey of Owen County, Indiana

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Resources, Division of Soil Conservation and State Soil Conservation Board

OWEN COUNTY is in the southwestern part of Indiana (fig. 1). It has a total area of 391 square miles or 248,224 acres. The survey area includes three major land resource areas (MLRAs): Southern Illinois and Indiana Thin Loess and Till Plain (MLRA 114); Kentucky and Indiana Sandstone and Shale Hills and Valleys (MLRA 120); and Highland Rim and Pennyroyal (MLRA 122). The county extends about 21 miles from north to south and 23 miles from east to west. In 1990, the population of Owen County was 17,281 (United States Department of Commerce, 1990). In 1990, Spencer, the county seat and the largest town, had a population of 2,609. Spencer is in the southeastern part of the county.

Most of the land area in the county is used for agriculture. Cash grain crops and the production of livestock are the major farming enterprises. Corn, soybeans, and winter wheat are the main cash grain crops. Hogs and beef cattle are the main livestock raised and there are a few dairy operations. About 30 percent of the county is used as cropland, 14 percent is used for pasture, and 52 percent is woodland. The remaining areas are used for other purposes (USDA, 1987). Many small areas near local towns and along highways have been developed as sites for dwellings and businesses.

This soil survey updates and refines the soil survey of Owen County published in 1964 (USDA, 1964). It provides additional information and has larger maps,

which show the soils in greater detail. It provides additional information about soil interpretations.

General Nature of the Survey Area

This section gives general information about the physical and cultural features of the county. It describes history and development; physiography, relief, and drainage; and climate.

History and Development

The earliest evidence of occupation in Owen County is found in burial mounds throughout the county that were created by Native Americans. Most of the mounds contained crude pottery and implements of polished stone and flint, and some contained deposits of bones. The Native Americans, who were of the Miami, Potawatami, Eel River, and Delaware tribes, planted corn on the rich bottom land and hunted wild game, which was abundant on the rolling, wooded uplands.

In 1809, after white men came to this area, the natives ceded to them most of the area that is now Owen County. The treaty that transferred this land was called the Treaty of Fort Wayne. The boundary established by this treaty, known as the Ten O'clock Line, runs diagonally across the northeastern part of the county. The rest of the county was later purchased from the native peoples.



Figure 1.—Location of Owen County in Indiana.

An act passed by the Indiana State Legislature on December 21, 1818, to become effective January 1, 1819, established Owen County. The new county was carved from an area that included Sullivan and Daviess Counties. A few years later, Owen County was divided to form part of Clay and Putnam Counties. Settlers had been coming to the area as early as 1816. Most of the early settlers were from Kentucky, Virginia, and North Carolina, some having sojourned in southern Indiana counties before migrating to Owen County. Many included veterans or widows of the American Revolution and other wars. Some were veterans of the War of 1812 or comrades of Kentucky captains Abraham Owen and Spier Spencer, both of whom were killed at the battle of Tippecanoe, and for whom the county and town were named. The first towns established in Owen County, besides Spencer, were Freedom and Gosport. All these towns were established on the White River which was used for travel by flatboat and steamboat.

In later years, there has been much interest in developing Owen County. Significant population

increases rank Owen as the fourth fastest growing county in the state, as residents are able to commute to work in three large cities, Bloomington, Terre Haute, and Indianapolis.

Physiography, Relief, and Drainage

Owen County is made mainly of three physiographic units—the Wabash Lowland in the extreme western part of the county, the Crawford Upland in the central part, and the Mitchell Plain in the eastern part (Indiana Department of Conservation, 1956). The Wabash Lowland is characterized by broad, nearly level uplands dissected by gently sloping to strongly sloping drainageways. The Crawford Upland is characterized by gently sloping or moderately sloping ridges that are separated by valleys and have steep or very steep sides. The Mitchell Plain is characterized by rolling upland areas underlain by limestone. Karst topography is a distinctive feature of the plain. Nearly level flood plains are along the streams of all three physiographic units.

The highest elevation of the county is about 930 feet above sea level, in an area in Taylor Township. The lowest elevation is about 520 feet above sea level in an area along the White River where it leaves Owen County and enters Greene County. Most of the county is drained by the White River and its tributaries. The main streams that drain into White River are Fish Creek, Lick Creek, Rattlesnake Creek, Raccoon Creek, Little Mill Creek, and Limestone Creek. The northwestern part of the county is drained mainly by Mill Creek and Jordan Creek. The extreme southwestern part of the county is drained by Eel River.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Spencer in the period 1961 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season.

In winter, the average temperature is 29 degrees F and the average daily minimum temperature is 19 degrees. The lowest temperature on record, which occurred at Spencer on January 17, 1977, was -26 degrees. In summer, the average temperature is 73 degrees and the average daily maximum temperature is 85 degrees. The highest recorded temperature, which occurred at Spencer on July 19, 1954, is 107 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation is 44.32 inches. Of this total, about 25.19 inches, or 57 percent, usually falls in April through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall on record was 5.21 inches at Spencer on July 13, 1979. Thunderstorms occur on about 43 days each year, and most occur in July.

The average seasonal snowfall is 16.9 inches. The greatest snow depth at any one time was 12 inches. On average, 8 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 12 inches.

The average relative humidity in midafternoon is about 62 percent. Humidity is higher at night, and the average at dawn is about 83 percent. The sun shines 67 percent of the time possible in summer and 43 percent in winter. The prevailing wind is from the southwest. Average windspeed is highest, 11.7 miles per hour, in March.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific

segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Aerial photographs used in this survey were taken in 1986. Soil scientists also studied U.S. Geological Survey topographic maps enlarged to a scale of 1:12,000, ortho-photographs, and infrared photography to relate land and image features.

Specific soil boundaries were drawn on the ortho-photographs. Adjustments of soil boundary lines were made to coincide with the U.S. Geological Survey topographic map contour lines and tonal patterns on aerial photographs.

This survey area was mapped at two levels of detail. At the more detailed level, map units are narrowly defined. Map unit boundaries were plotted and verified at closely spaced intervals. At the less detailed level, map units are broadly defined. Boundaries were plotted and verified at wider intervals. In the legend for the detailed soil maps, narrowly defined units are indicated by symbols in which the first letter is a capital and the second is lowercase. For broadly defined units, the first and second letters are capitals.

The descriptions, names, and delineations of the soils in this survey do not fully agree with those of the earlier surveys nor with those of the surveys of adjacent counties. These differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the extent of soils in the survey areas.

Detailed Soil Map Units

The map units on the detailed maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses. More information about each map unit is given under the heading "Use and Management of the Soils."

A map unit delineation on the detailed soil maps represents an area on the landscape and consists of one or more soils or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to other taxonomic classes.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where

the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit.

Soils that have profiles that are almost alike make up a soil series. Except for differences in texture of the surface layer or of the underlying layers, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, frequency of flooding, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into soil phases. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Parke silt loam, 6 to 12 percent slopes, severely eroded, is a phase of the Parke series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are called complexes or undifferentiated groups.

A complex consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alvin-Bloomfield loamy sands, 6 to 12 percent slopes, is an example.

An undifferentiated group is made up of two or more soils, or miscellaneous areas that could be mapped individually, but are mapped as one unit

because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Tapawingo and Nawakwa silt loams, 2 to 8 percent slopes, is an undifferentiated group in this survey area.

This survey includes miscellaneous areas. Such areas have little or no soil material and support little or no vegetation. The map unit Pits, quarry, is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see Contents) give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

AbgAU—Adrian muck, undrained, 0 to 1 percent slopes

Setting

Landform: Outwash plains and flood plains

Position on the landform: Depressions

Soil Properties and Qualities

Parent material: Organic soil materials over outwash

Depth class: Very deep (more than 60 inches)

Drainage class: Very poorly drained

Depth to water table: 0.0 to 0.5 foot (apparent)

Ponding: 2 feet

Available water capacity to a depth of 60 inches:
About 17.1 inches

Composition

Adrian muck and similar soils: 100 percent

AfeC—Alvin-Bloomfield loamy sands, 6 to 12 percent slopes

Setting

Landform: Dunes

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Alvin

Parent material: Eolian loamy over sandy materials

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches:
About 7.9 inches

Bloomfield

Parent material: Eolian sandy materials

Depth class: Very deep (more than 80 inches)

Drainage class: Somewhat excessively drained

Available water capacity to a depth of 60 inches:
About 6.0 inches

Composition

Alvin and similar soils: 50 percent

Bloomfield and similar soils: 37 percent

Dissimilar components: 13 percent

- Alvin and Bloomfield soils that have slopes of 2 to 6 percent; on summits
- Alvin and Bloomfield soils that have slopes of 12 to 18 percent; on backslopes and intermixed throughout the unit
- Ayrshire soils in interdunal areas

AfeD—Alvin-Bloomfield loamy sands, 12 to 18 percent slopes

Setting

Landform: Dunes

Position on the landform: Backslopes

Soil Properties and Qualities

Alvin

Parent material: Eolian loamy over sandy materials

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches:
About 7.9 inches

Bloomfield

Parent material: Eolian sandy materials

Depth class: Very deep (more than 80 inches)

Drainage class: Somewhat excessively drained

Available water capacity to a depth of 60 inches:
About 6.0 inches

Composition

Alvin and similar soils: 50 percent

Bloomfield and similar soils: 34 percent

Dissimilar components: 16 percent

- Alvin and Bloomfield soils that have slopes of 2 to 12 percent; on shoulders and summits and intermixed throughout the unit
- Alvin and Bloomfield soils that have slopes of 18 to 25 percent; on backslopes and intermixed throughout the unit
- Ayrshire soils in interdunal areas

AffE—Alvin-Bloomfield-Princeton complex, 18 to 25 percent slopes

Setting

Landform: Dunes

Position on the landform: Backslopes

Soil Properties and Qualities

Alvin

Parent material: Eolian loamy over sandy materials

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches:
About 7.9 inches

Bloomfield

Parent material: Eolian sandy materials

Depth class: Very deep (more than 80 inches)

Drainage class: Somewhat excessively drained

Available water capacity to a depth of 60 inches:
About 6.0 inches

Princeton

Parent material: Eolian loamy over sandy materials

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches:
About 9.6 inches

Composition

Alvin and similar soils: 45 percent

Bloomfield and similar soils: 27 percent

Princeton and similar soils: 18 percent

Dissimilar components: 10 percent

- Alvin and Bloomfield soils that have slopes of 6 to 18 percent; on shoulders and summits and intermixed throughout the unit
- Ayrshire soils in interdunal areas
- Gallimore soils on backslopes adjacent to dissected outwash plains

AfsB—Alvin-Princeton fine sandy loams, 2 to 6 percent slopes

Setting

Landform: Dunes

Position on the landform: Summits

Soil Properties and Qualities (fig. 2)

Alvin

Parent material: Eolian loamy over sandy materials

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches:
About 8.4 inches

Princeton

Parent material: Eolian loamy over sandy materials

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches:
About 9.6 inches

Composition

Alvin and similar soils: 48 percent

Princeton and similar soils: 38 percent

Dissimilar components: 14 percent

- Very deep, moderately well drained, loamy soils in interdunal areas
- Ayrshire soils in interdunal areas
- Princeton and Alvin soils that have slopes of 6 to 12 percent; on shoulders and backslopes and intermixed throughout the unit
- Bloomfield soils that have slopes of 2 to 12 percent; on shoulders and summits and intermixed throughout the unit

AfsC—Alvin-Princeton fine sandy loams, 6 to 12 percent slopes

Setting

Landform: Dunes

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Alvin

Parent material: Eolian loamy over sandy materials

Depth class: Very deep (more than 80 inches)



Figure 2.—Homes built in an area of Alvin-Princeton fine sandy loams, 2 to 6 percent slopes. Generally, these soils are well suited as sites for homes.

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 8.4 inches

Princeton

Parent material: Eolian loamy over sandy materials

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.6 inches

Composition

Alvin and similar soils: 50 percent

Princeton and similar soils: 38 percent

Dissimilar components: 12 percent

- Bloomfield soils that have slopes of 6 to 18 percent; on shoulders and backslopes and intermixed throughout the unit

- Very deep, moderately well drained, loamy soils in interdunal areas

- Ayrshire soils in interdunal areas

AftD—Alvin-Princeton sandy loams, 12 to 18 percent slopes

Setting

Landform: Dunes

Position on the landform: Backslopes

Soil Properties and Qualities

Alvin

Parent material: Eolian loamy over sandy materials

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 8.4 inches

Princeton

Parent material: Eolian loamy over sandy materials

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.6 inches

Composition

Alvin and similar soils: 48 percent

Princeton and similar soils: 33 percent

Dissimilar components: 19 percent

- Bloomfield soils that have slopes of 12 to 25 percent; on backslopes and intermixed throughout the unit
- Alvin soils that have slopes of 18 to 25 percent; on backslopes and intermixed throughout the unit
- Alvin soils that have slopes of 6 to 12 percent; on shoulders and summits and intermixed throughout the unit
- Ayrshire soils in interdunal areas
- Very deep, poorly drained, loamy soils in drainageways and on footslopes

AhrAK—Armiesburg silty clay loam, 0 to 2 percent slopes, occasionally flooded, brief duration

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Parent material: Silty alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 11.7 inches

Composition

Armiesburg and similar soils: 95 percent

Dissimilar components: 5 percent

- McAdoo soils on the lower lying flood-plain steps
- Newark soils in drainageways

AkeB2—Arney silt loam, 2 to 6 percent slopes, eroded

Setting

Landform: Dissected till plains

Position on the landform: Summits and shoulders

Soil Properties and Qualities

Parent material: Loess and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.5 feet (perched)

Available water capacity to a depth of 60 inches: About 9.5 inches

Composition

Arney and similar soils: 85 percent

Dissimilar components: 15 percent

- Lieber soils that have slopes of 1 to 4 percent; on summits and intermixed throughout the unit
- Cincinnati soils that have slopes of 6 to 12 percent; on shoulders and backslopes
- Stinesville soils that have slopes of 2 to 6 percent; on shoulders and summits

AloB2—Ava silt loam, 2 to 6 percent slopes, eroded

Setting

Landform: Dissected till plains

Position on the landform: Shoulders and summits

Soil Properties and Qualities (fig. 3)

Parent material: Loess, silty or loamy sediments, and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 2 to 3 feet (perched)

Available water capacity to a depth of 60 inches: About 8.0 inches

Composition

Ava and similar soils: 87 percent

Dissimilar components: 13 percent

- Shakamak soils that have slopes of 1 to 3 percent; on summits
- Cincinnati soils that have slopes of 2 to 6 percent; on shoulders and summits and intermixed throughout the unit
- Ava soils that have slopes of 4 to 6 percent and are severely eroded; on shoulders and backslopes and intermixed throughout the unit

AmkA—Ayrshire fine sandy loam, 0 to 2 percent slopes

Setting

Landform: Interdunes

Position on the landform: Nearly level summits

Soil Properties and Qualities

Parent material: Eolian loamy materials

Depth class: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Depth to water table: 0.5 foot to 2.0 feet (apparent)

Available water capacity to a depth of 60 inches: About 8.9 inches

Composition

Ayrshire and similar soils: 90 percent

Dissimilar components: 10 percent

- Very deep, moderately well drained, loamy soils on slight rises
- Very deep, very poorly drained, loamy soils that have a dark surface layer; in shallow depressions

BdxAV—Belknap silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Parent material: Acid, silty alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Depth to water table: 0.5 foot to 2.0 feet (apparent)

Available water capacity to a depth of 60 inches: About 13.3 inches

Composition

Belknap and similar soils: 75 percent

Dissimilar components: 25 percent

- Belknap soils that are undrained
- Steff soils on the higher lying flood-plain steps
- Bonnie soils in backswamps and drainageways

BgeAH—Birds silt loam, 0 to 1 percent slopes, frequently flooded, brief duration

Setting

Landform: Flood plains



Figure 3.—These cattle are grazing on fescue in an area of Ava silt loam. This soil is generally well suited to several different varieties of grasses and legumes for pasture.

Position on the landform: Backswamps

Soil Properties and Qualities

Parent material: Acid, silty alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Poorly drained

Depth to water table: 0.0 to 0.5 foot (apparent)

Ponding: 1 foot

Available water capacity to a depth of 60 inches: About 13.0 inches

Composition

Birds and similar soils: 83 percent

Dissimilar components: 17 percent

- Wakeland and Holton soils on the higher lying flood-plain steps
- Birds soils that are drained
- Wilhite soils in backswamps and drainageways

BodAV—Bonnie silt loam, 0 to 1 percent slopes, frequently flooded, very brief duration

Setting

Landform: Flood plains

Position on the landform: Backswamps

Soil Properties and Qualities

Parent material: Acid, silty alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Poorly drained

Depth to water table: 0 to 1 foot (apparent)

Ponding: 0.5 foot

Available water capacity to a depth of 60 inches: About 13.4 inches

Composition

Bonnie and similar soils: 84 percent

Dissimilar components: 16 percent

- Bonnie soils that are undrained and are typically in woods
- Belknap and Stendal soils on the higher lying flood-plain steps

CkkB2—Cinninnati silt loam, 2 to 6 percent slopes, eroded

Setting

Landform: Dissected till plains

Position on the landform: Summits and shoulders

Soil Properties and Qualities

Parent material: Loess and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 2 to 3 feet (perched)

Available water capacity to a depth of 60 inches: About 7.6 inches

Composition

Cinninnati and similar soils: 85 percent

Dissimilar components: 15 percent

- Ava soils that have slopes of 1 to 6 percent; on summits and intermixed throughout the unit
- Cinninnati soils that have slopes of 6 to 12 percent; on shoulders and upper parts of backslopes

CkkC2—Cinninnati silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Dissected till plains

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 2 to 3 feet (perched)

Available water capacity to a depth of 60 inches: About 7.2 inches

Composition

Cinninnati and similar soils: 74 percent

Dissimilar components: 26 percent

- Cinninnati soils that have slopes of 6 to 12 percent and are severely eroded; on shoulders and backslopes and intermixed throughout the unit
- Cinninnati soils that have slopes of 2 to 6 percent; on narrow, elongated summits
- Ava soils that have slopes of 1 to 4 percent; on summits and intermixed throughout the unit
- Stendal soils on toeslopes
- Cinninnati soils that have slopes of 12 to 18 percent; on backslopes

CkkC3—Cinninnati silt loam, 6 to 12 percent slopes, severely eroded

Setting

Landform: Dissected till plains

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 6.4 inches

Composition

Cincinnati and similar soils: 70 percent

Dissimilar components: 30 percent

- Cincinnati soils that have slopes of 6 to 12 percent and are slightly or moderately eroded; on shoulders and backslopes and intermixed throughout the unit

- Stendal soils on toeslopes

- Cincinnati soils that have slopes of 12 to 18 percent; on backslopes

- Ava and Cincinnati soils that have slopes of 2 to 6 percent; on summits and intermixed throughout the unit

CkkD2—Cincinnati silt loam, 12 to 18 percent slopes, eroded

Setting

Landform: Dissected till plains

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 2 to 3 feet (perched)

Available water capacity to a depth of 60 inches: About 8.8 inches

Composition

Cincinnati and similar soils: 73 percent

Dissimilar components: 27 percent

- Cincinnati soils that have slopes of 12 to 18 percent and are severely eroded; on backslopes and intermixed throughout the unit

- Cincinnati soils that have slopes of 6 to 12 percent; on shoulders and the upper part of backslopes

- Hickory soils that have slopes of 12 to 25 percent; on backslopes

- Stendal soils on toeslopes

- Otwell soils that have slopes of 12 to 18 percent; on backslopes

CkkD3—Cincinnati silt loam, 12 to 18 percent slopes, severely eroded

Setting

Landform: Dissected till plains

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 5.9 inches

Composition

Cincinnati and similar soils: 70 percent

Dissimilar components: 30 percent

- Cincinnati soils that have slopes of 12 to 18 percent and are slightly or moderately eroded; on backslopes and intermixed throughout the unit

- Cincinnati soils that have slopes of 6 to 12 percent; on shoulders and the upper part of backslopes

- Hickory soils that have slopes of 12 to 25 percent; on backslopes and intermixed throughout the unit

- Stendal soils on toeslopes

CspC2—Crider silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Hills underlain with limestone

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in clayey residuum

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.7 inches

Composition

Crider and similar soils: 80 percent

Dissimilar components: 20 percent

- Crider soils that have slopes of 6 to 12 percent and are severely eroded; on shoulders and backslopes and intermixed throughout the unit

- Haggatt soils that have slopes of 12 to 18 percent; on backslopes and intermixed throughout the unit

- Crider soils that have slopes of 12 to 18 percent; on backslopes
- Crider soils that have slopes of 2 to 6 percent; on summits

CspC3—Crider silt loam, 6 to 12 percent slopes, severely eroded

Setting

Landform: Hills underlain with limestone

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in clayey residuum

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 8.9 inches

Composition

Crider and similar soils: 70 percent

Dissimilar components: 30 percent

- Crider soils that have slopes of 6 to 12 percent and are slightly or moderately eroded; on shoulders and backslopes and intermixed throughout the unit
- Haggatt soils that have slopes of 12 to 18 percent; on backslopes and intermixed throughout the unit
- Grayford soils that have slopes of 6 to 12 percent; on backslopes

DfnA—Dubois silt loam, 0 to 2 percent slopes

Setting

Landform: Lake plains

Position on the landform: Flats

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Somewhat poorly drained

Depth to water table: 0.5 foot to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 8.2 inches

Composition

Dubois and similar soils: 84 percent

Dissimilar components: 16 percent

- Peoga soils in shallow closed depressions and on head slopes

- Haubstadt soils that have slopes of 0 to 2 percent; on slight rises
- Dubois soils that have slopes of 2 to 6 percent; on shoulders

EaaD2—Ebal silt loam, 12 to 18 percent slopes, eroded

Setting

Landform: Structural benches underlain with shale

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Thin loess and/or loamy colluvium and a paleosol in clayey residuum

Depth class: Deep or very deep (50 to 90 inches)

Drainage class: Moderately well drained

Depth to water table: 2 to 3 feet (perched)

Available water capacity to a depth of 60 inches: About 7.5 inches

Composition

Ebal and similar soils: 78 percent

Dissimilar components: 22 percent

- Tulip soils that have slopes of 12 to 25 percent; on backslopes and intermixed throughout the unit
- Ebal soils that have slopes of 6 to 12 percent; on backslopes

GaaE2—Gallimore loam, 18 to 25 percent slopes, eroded

Setting

Landform: Dissected outwash plains

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Loamy over sandy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 7.6 inches

Composition

Gallimore and similar soils: 77 percent

Dissimilar components: 23 percent

- Chetwynd soils that have slopes of 18 to 25 percent; on backslopes and intermixed throughout the unit
- Gallimore soils that have slopes of 25 to 35 percent; on backslopes

- Parke soils that have slopes of 12 to 18 percent; on the upper part of backslopes
- Holton soils on flood plains and alluvial fans

GabG—Gallimore-Chetwynd complex, 25 to 70 percent slopes

Setting

Landform: Dissected outwash plains

Position on the landform: Backslopes

Soil Properties and Qualities

Gallimore

Parent material: Loamy over sandy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 8.0 inches

Chetwynd

Parent material: Loamy over sandy outwash that can be capped with thin loess

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.2 inches

Composition

Gallimore and similar soils: 48 percent

Chetwynd and similar soils: 26 percent

Dissimilar components: 26 percent

- Very deep, well drained sandy soils in areas on the lower part of backslopes
- Parke soils that have slopes of 6 to 18 percent; on shoulders and the upper part of backslopes
- Pike soils that have slopes of 2 to 6 percent; on summits
- Wirt and Holton soils on narrow flood plains and alluvial fans

GblAH—Gessie silt loam, 0 to 2 percent slopes, frequently flooded, brief duration

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps and natural levees

Soil Properties and Qualities

Parent material: Calcareous, loamy alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.5 inches

Composition

Gessie and similar soils: 88 percent

Dissimilar components: 12 percent

- Stonelick soils on natural levees and intermixed throughout the unit
- Gessie soils that are subject to occasional or rare periods of flooding; on the higher lying flood-plain steps
- Very deep, somewhat poorly drained, loamy soils in drainageways

GmcD3—Grayford silt loam, 12 to 18 percent slopes, severely eroded

Setting

Landform: Dissected till plains over limestone

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Thin loess and a paleosol in till and clayey residuum

Depth class: Deep (40 to 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 7.8 inches

Composition

Grayford and similar soils: 80 percent

Dissimilar components: 20 percent

- Ryker soils that have slopes of 6 to 18 percent; on shoulders and backslopes and intermixed throughout the unit
- Grayford soils that have slopes of 18 to 25 percent; on backslopes

GmcE2—Grayford silt loam, 18 to 25 percent slopes, eroded

Setting

Landform: Dissected till plains over limestone

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Thin loess and a paleosol in till and clayey residuum

Depth class: Deep (40 to 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 7.3 inches

Composition

Grayford and similar soils: 82 percent

Dissimilar components: 18 percent

- Ryker soils that have slopes of 18 to 25 percent; on backslopes and intermixed throughout the unit
- Grayford soils that have slopes of 25 to 35 percent; on backslopes
- Hickory soils that have slopes of 18 to 35 percent; on backslopes
- Ryker soils that have slopes of 6 to 12 percent; on shoulders and summits and intermixed throughout the unit
- Gallimore soils that have slopes of 18 to 25 percent; on backslopes

Gmhd2—Grayford-Ryker silt loams, 12 to 18 percent slopes, eroded

Setting

Landform: Dissected till plains over limestone

Position on the landform: Backslopes

Soil Properties and Qualities

Grayford

Parent material: Thin loess and a paleosol in till and clayey residuum

Depth class: Deep (40 to 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 8.6 inches

Ryker

Parent material: Loess and a paleosol in till and clayey residuum

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.9 inches

Composition

Grayford and similar soils: 57 percent

Ryker and similar soils: 31 percent

Dissimilar components: 12 percent

- Ryker soils that have slopes of 6 to 12 percent; on shoulders and the upper part of backslopes
- Grayford soils that have slopes of 18 to 25 percent; on backslopes

GmpE2—Greybrook silt loam, 18 to 25 percent slopes, eroded

Setting

Landform: Dissected lake plains

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Thin loess and a paleosol in loamy lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 10.8 inches

Composition

Greybrook and similar soils: 91 percent

Dissimilar components: 9 percent

- Haubstadt soils that have slopes of 2 to 6 percent; on summits
- Greybrook soils that have slopes of 25 to 35 percent; on backslopes
- Otwell soils that have slopes of 6 to 18 percent; on shoulders and the upper part of backslopes
- Very deep, somewhat poorly drained, loamy soils on toeslopes

GmpF—Greybrook silt loam, 25 to 35 percent slopes

Setting

Landform: Dissected lake plains

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Thin loess and a paleosol in loamy lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 10.6 inches

Composition

Greybrook and similar soils: 91 percent

Dissimilar components: 9 percent

- Otwell soils that have slopes of 6 to 18 percent; on shoulders and the upper part of backslopes
- Very deep, somewhat poorly drained, loamy soils on toeslopes

HarD2—Haggatt silt loam, 12 to 18 percent slopes, eroded

Setting

Landform: Hills underlain with limestone

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Thin loess and a paleosol in clayey residuum

Depth class: Deep (40 to 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 6.3 inches

Composition

Haggatt and similar soils: 86 percent

Dissimilar components: 14 percent

- Crider soils that have slopes of 6 to 18 percent; on shoulders and backslopes and intermixed throughout the unit
- Caneyville soils that have slopes of 18 to 25 percent; on backslopes and intermixed throughout the unit

HarD3—Haggatt silt loam, 12 to 18 percent slopes, severely eroded

Setting

Landform: Hills underlain with limestone

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Thin loess and a paleosol in clayey residuum

Depth class: Deep (40 to 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 5.9 inches

Composition

Haggatt and similar soils: 88 percent

Dissimilar components: 12 percent

- Crider soils that have slopes of 6 to 18 percent; on shoulders and backslopes and intermixed throughout the unit
- Caneyville soils that have slopes of 18 to 25 percent; on backslopes and intermixed throughout the unit

HasE2—Haggatt-Caneyville silt loams, 18 to 25 percent slopes, eroded

Setting

Landform: Hills underlain with limestone

Position on the landform: Backslopes

Soil Properties and Qualities

Haggatt

Parent material: Thin loess and a paleosol in clayey residuum

Depth class: Deep (40 to 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 6.3 inches

Caneyville

Parent material: Clayey residuum

Depth class: Moderately deep (20 to 40 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 4.8 inches

Composition

Haggatt and similar soils: 51 percent

Caneyville and similar soils: 31 percent

Dissimilar components: 18 percent

- Crider soils that have slopes of 12 to 18 percent; on shoulders and backslopes and intermixed throughout the unit
- Wellston and Ebal soils that have slopes of 18 to 25 percent; on backslopes
- Rock outcrop on backslopes and intermixed throughout the unit

HccA—Haubstadt silt loam, 0 to 2 percent slopes

Setting

Landform: Lake plains

Position on the landform: Summits

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 8.7 inches

Composition

Haubstadt and similar soils: 80 percent

Dissimilar components: 20 percent

- Dubois soils that have slopes of 0 to 2 percent; on slightly lower lying flats
- Haubstadt soils that have slopes of 2 to 6 percent; on shoulders and summits and intermixed throughout the unit

HccB2—Haubstadt silt loam, 2 to 6 percent slopes, eroded

Setting

Landform: Dissected lake plains

Position on the landform: Summits

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 8.4 inches

Composition

Haubstadt and similar soils: 85 percent

Dissimilar components: 15 percent

- Dubois soils that have slopes of 2 to 6 percent; on shoulders and summits and intermixed throughout the unit
- Very deep, somewhat poorly drained, loamy soils on toeslopes
- Haubstadt soils that have slopes of 0 to 2 percent; in narrow flats
- Otwell soils that have slopes of 6 to 12 percent; on shoulders and backslopes

HccC3—Haubstadt silt loam, 6 to 12 percent slopes, severely eroded

Setting

Landform: Dissected lake plains

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.0 to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 6.6 inches

Composition

Haubstadt and similar soils: 80 percent

Dissimilar components: 20 percent

- Haubstadt soils that have slopes of 6 to 12 percent and are slightly or moderately eroded; on shoulders and backslopes and intermixed throughout the unit
- Very deep, somewhat poorly drained, loamy soils on toeslopes
- Haubstadt soils that have slopes of 2 to 6 percent; on summits

HcgAH—Haymond silt loam, 0 to 2 percent slopes, frequently flooded, brief duration

Setting

Landform: Flood plains

Position on the landform: Natural levees and flood-plain steps

Soil Properties and Qualities

Parent material: Silty alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 12.6 inches

Composition

Haymond and similar soils: 86 percent

Dissimilar components: 14 percent

- Wirt soils on natural levees and intermixed throughout the unit
- Wilbur soils on the lower lying flood-plain steps

HchA—Haymond silt loam, sinkhole, 0 to 2 percent slopes

Setting

Landform: Sinkholes

Position on the landform: Toeslopes

Soil Properties and Qualities

Parent material: Silty alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 12.1 inches

Composition

Haymond and similar soils: 90 percent

Dissimilar components: 10 percent

- Wilbur soils on toeslopes within sinkholes
- Very deep, somewhat poorly drained, silty soils on toeslopes within sinkholes

HefG—Hickory loam, 45 to 70 percent slopes

Setting

Landform: Dissected till plain

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Till

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.2 inches

Composition

Hickory and similar soils: 78 percent

Dissimilar components: 22 percent

- Hickory soils that have slopes of 18 to 35 percent; on backslopes
- Cincinnati soils that have slopes of 2 to 12 percent; on shoulders and summits
- Holton and Oldenburg soils on toeslopes
- Chetwynd soils that have slopes of 30 to 70 percent; on backslopes

HelD2—Hickory-Stinesville silt loams, karst, hilly, eroded

Setting

Landform: Sinkholes on dissected till plains

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Hickory

Parent material: Thin loess and till

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.6 inches

Stinesville

Parent material: Loess and a paleosol in till and clayey residuum

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 10.9 inches

Composition

Hickory and similar soils: 62 percent

Stinesville and similar soils: 27 percent

Dissimilar components: 11 percent

- Haymond soils on toeslopes within sinkholes
- Cincinnati soils that have slopes of 2 to 12 percent; on shoulders and summits between sinkholes
- Wellston soils that have slopes of 18 to 25 percent; on backslopes of sinkholes and intermixed throughout the unit

HeoE—Hickory silt loam, 18 to 25 percent slopes

Setting

Landform: Dissected till plains

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Thin loess and till

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.9 inches

Composition

Hickory and similar soils: 76 percent

Dissimilar components: 24 percent

- Cincinnati soils on shoulders and summits
- Oldenburg soils on toeslopes
- Hickory soils that have slopes of 25 to 70 percent; on backslopes
- Wellston, Chetwynd, and Gallimore soils that have slopes of 18 to 25 percent; on backslopes

HeoE3—Hickory silt loam, 18 to 25 percent slopes, severely eroded

Setting

Landform: Dissected till plains

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Thin loess and till

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.0 inches

Composition

Hickory and similar soils: 85 percent

Dissimilar components: 15 percent

- Cincinnati soils that have slopes of 6 to 18 percent; on shoulders and backslopes
- Hickory soils that have slopes of 25 to 35 percent; on backslopes
- Wellston soils that have slopes of 18 to 25 percent; on backslopes and intermixed throughout the unit

HeoG—Hickory silt loam, 25 to 70 percent slopes

Setting

Landform: Dissected till plains

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Thin loess and till

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.8 inches

Composition

Hickory and similar soils: 80 percent

Dissimilar components: 20 percent

- Oldenburg soils on toeslopes
- Cincinnati soils that have slopes of 2 to 12 percent; on shoulders and summits
- Hickory soils that have slopes of 18 to 25 percent; on shoulders and backslopes
- Wellston soils that have slopes of 25 to 35 percent; on backslopes and intermixed throughout the unit
- Chetwynd and Gallimore soils that have slopes of 25 to 70 percent; on backslopes and intermixed throughout the unit

HepG—Hickory-Adyeville complex, 35 to 60 percent slopes

Setting

Landform: Dissected till plains over interbedded shale, siltstone, and sandstone

Position on the landform: Backslopes

Soil Properties and Qualities

Hickory

Parent material: Thin loess and till

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.8 inches

Adyeville

Parent material: Loamy residuum

Depth class: Moderately deep (20 to 40 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 3.9 inches

Composition

Hickory and similar soils: 58 percent

Adyeville and similar soils: 21 percent

Dissimilar components: 21 percent

- Hickory and Wellston soils that have slopes of 18 to 35 percent; on backslopes
- Piankeshaw soils on toeslopes
- Cincinnati soils that have slopes of 6 to 18 percent; on shoulders and summits
- Rock outcrop on backslopes and intermixed throughout the unit

HesG—Hickory-Chetwynd loams, 35 to 70 percent slopes

Setting

Landform: Dissected till plains

Position on the landform: Backslopes

Soil Properties and Qualities

Hickory

Parent material: Till

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.2 inches

Chetwynd

Parent material: Loamy over sandy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.4 inches

Composition

Hickory and similar soils: 52 percent

Chetwynd and similar soils: 23 percent

Dissimilar components: 25 percent

- Hickory and Chetwynd soils that have slopes of 18 to 35 percent; on backslopes
- Cincinnati soils that have slopes of 2 to 12 percent; on shoulders and summits
- Hickory and Chetwynd soils adjacent to Cataract Lake and are subject to flooding in areas; on the lower part of backslopes
- Pike soils that have slopes of 2 to 6 percent; in narrow, elongated areas on summits
- Holton soils on toeslopes

HeuE—Hickory-Wellston silt loams, 18 to 25 percent slopes

Setting

Landform: Dissected till plains over interbedded shale, siltstone, and sandstone

Position on the landform: Backslopes

Soil Properties and Qualities

Hickory

Parent material: Thin loess and till

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.8 inches

Wellston

Parent material: Thin loess and loamy residuum

Depth class: Deep (40 to 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 8.2 inches

Composition

Hickory and similar soils: 55 percent

Wellston and similar soils: 27 percent

Dissimilar components: 18 percent

- Holton soils on toeslopes
- Hickory and Adyeville soils that have slopes of 25 to 35 percent; on backslopes
- Cincinnati soils that have slopes of 6 to 18 percent; on shoulders and summits

HeuF—Hickory-Wellston silt loams, 25 to 35 percent slopes

Setting

Landform: Dissected till plains over interbedded shale, siltstone, and sandstone

Position on the landform: Backslopes

Soil Properties and Qualities

Hickory

Parent material: Thin loess and till

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.8 inches

Wellston

Parent material: Thin loess and loamy residuum

Depth class: Deep (40 to 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 6.4 inches

Composition

Hickory and similar soils: 49 percent

Wellston and similar soils: 26 percent

Dissimilar components: 25 percent

- Hickory and Adyeville soils that have slopes of 35 to 70 percent; on backslopes
- Oldenburg and Piankeshaw soils on toeslopes
- Cincinnati soils that have slopes of 6 to 18 percent; on shoulders and summits

HkaB—Hollybrook silt loam, 1 to 5 percent slopes

Setting

Landform: Reconstructed plains and gently sloping hills from surface mining operations

Position on the landform: Summits, shoulders, and backslopes

Soil Properties and Qualities

Parent material: Loamy soil materials overlying, graded shaly regolith

Depth class: Very deep (more than 80 inches)

Drainage class: Somewhat poorly drained

Depth to water table: 0.5 foot to 2.0 feet
(perched)

Available water capacity to a depth of 60 inches: About 7.4 inches

Composition

Hollybrook and similar soils: 93 percent

Dissimilar components: 7 percent

- Tapawingo and Nawakwa soils that have slopes of 1 to 5 percent; intermixed throughout the unit
- Very deep, loamy soils in excavated areas intermixed throughout the unit

HleAV—Holton silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Parent material: Loamy alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Depth to water table: 0.5 foot to 2.0 feet (apparent)

Available water capacity to a depth of 60 inches: About 10.9 inches

Composition

Holton and similar soils: 72 percent

Dissimilar components: 28 percent

- Holton soils that are undrained and intermixed throughout the unit
- Oldenburg soils on the higher lying flood-plain steps
- Very deep, poorly drained, loamy soils in backswamps and drainageways

HnoA—Hoosierville silt loam, 0 to 1 percent slopes

Setting

Landform: Till plains

Position on the landform: Nearly level summits

Soil Properties and Qualities

Parent material: Loess and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Poorly drained

Depth to water table: 0 to 1 foot (perched)

Ponding: 0.5 foot

Available water capacity to a depth of 60 inches: About 9.6 inches

Composition

Hoosierville and similar soils: 90 percent

Dissimilar components: 10 percent

- Lieber soils on slight rises

LnfA—Lieber silt loam, 0 to 2 percent slopes

Setting

Landform: Till plains

Position on the landform: Nearly level summits

Soil Properties and Qualities

Parent material: Loess and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Somewhat poorly drained

Depth to water table: 0.5 foot to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 8.9 inches

Composition

Lieber and similar soils: 75 percent

Dissimilar components: 25 percent

- Lieber soils that are undrained and intermixed throughout the unit
- Hoosierville soils in shallow closed depressions and on head slopes
- Arney soils that have slopes of 0 to 4 percent; on shoulders and summits and on narrow, elongated flats

LnfB—Lieber silt loam, 2 to 4 percent slopes

Setting

Landform: Till plains

Position on the landform: Shoulders

Soil Properties and Qualities

Parent material: Loess and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Somewhat poorly drained

Depth to water table: 0.5 foot to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 8.9 inches

Composition

Lieber and similar soils: 88 percent

Dissimilar components: 12 percent

- Arney soils that have slopes of 2 to 4 percent; on shoulders and summits
- Hoosierville soils in shallow, closed depressions and on head slopes

MecA—Martinsville loam, 0 to 2 percent slopes

Setting

Landform: Stream terraces

Position on the landform: Treads

Soil Properties and Qualities

Parent material: Loamy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.6 inches

Composition

Martinsville and similar soils: 90 percent

Dissimilar components: 10 percent

- Very deep, moderately well drained loamy soils on slight rises
- Whitaker soils in shallow depressions
- Martinsville soils that have slopes of 2 to 6 percent; on shoulders and backslopes

MecAQ—Martinsville loam, 0 to 2 percent slopes, rarely flooded

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Parent material: Loamy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.4 inches

Composition

Martinsville and similar soils: 88 percent

Dissimilar components: 12 percent

- Martinsville soils that have slopes of 2 to 6 percent and are occasionally or rarely flooded; on shoulders and backslopes
- Very deep, moderately well drained, loamy soils and are rarely flooded; on summits and intermixed throughout the unit
- Whitaker soils, rarely flooded, in drainageways

MecB—Martinsville loam, 2 to 6 percent slopes

Setting

Landform: Stream terraces

Position on the landform: Treads

Soil Properties and Qualities

Parent material: Loamy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.6 inches

Composition

Martinsville and similar soils: 92 percent

Dissimilar components: 8 percent

- Very deep, moderately well drained, loamy soils intermixed throughout the unit
- Martinsville soils that have slopes of 0 to 2 percent; on narrow, elongated flats

MhhAH—McAdoo silt loam, 0 to 2 percent slopes, frequently flooded, brief duration

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Parent material: Silty alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 12.8 inches

Composition

McAdoo and similar soils: 90 percent

Dissimilar components: 10 percent

- Gessie soils on natural levees and intermixed throughout the unit
- Newark soils in drainageways

MhhAK—McAdoo silt loam, 0 to 2 percent slopes, occasionally flooded, brief duration

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Parent material: Silty alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 12.8 inches

Composition

McAdoo and similar soils: 90 percent

Dissimilar components: 10 percent

- Armiesburg soils intermixed throughout the unit
- McAdoo soils, frequently flooded, on the lower lying flood-plain steps
- Newark soils in drainageways

MhuA—McGary silt loam, 0 to 2 percent slopes

Setting

Landform: Lake plains

Position on the landform: Flats

Soil Properties and Qualities

Parent material: Thin loess and calcareous, fine textured sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Somewhat poorly drained

Depth to water table: 0.5 foot to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 9.4 inches

Composition

McGary and similar soils: 93 percent

Dissimilar components: 7 percent

- Shircliff soils that have slopes of 1 to 6 percent; on shoulders and summits

MrcG—Minnehaha silty clay loam, 35 to 75 percent slopes

Setting

Landform: Hills from surface mining operations (fig. 4)

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Mixed shaly regolith and loamy soil material

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 3.7 inches

Composition

Minnehaha and similar soils: 90 percent

Dissimilar components: 10 percent

- Ponded water
- Very deep, loamy soils with a highly compacted surface layer and intermixed throughout the unit
- Very deep, loamy soils in excavated areas and intermixed throughout the unit

MsvA—Montgomery silty clay loam, 0 to 1 percent slopes

Setting

Landform: Lake plains

Position on the landform: Depressions

Soil Properties and Qualities

Parent material: Fine textured lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Poorly drained

Depth to water table: 0 to 1 foot (apparent)

Ponding: 1 foot

Available water capacity to a depth of 60 inches: About 9.3 inches

Composition

Montgomery and similar soils: 82 percent

Dissimilar components: 18 percent

- Montgomery soils that are undrained
- Montgomery soils that have 10 to 20 inches of silt loam overwash; in shallow depressions
- Very deep, poorly drained, clayey soils with a light colored surface layer; on flats
- McGary soils on slight rises



Figure 4.—Coal is being removed from this strip mine.

**MvrAH—Moundhaven loamy fine sand,
0 to 2 percent slopes, frequently
flooded, brief duration**

Setting

Landform: Flood plains

Position on the landform: Natural levees and flood-plain steps

Soil Properties and Qualities

Parent material: Calcareous sandy alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Somewhat excessively drained

Available water capacity to a depth of 60 inches: About 5.0 inches

Composition

Moundhaven and similar soils: 88 percent

Dissimilar components: 12 percent

- Stonelick soils intermixed throughout the unit
- Gessie soils on the higher lying flood-plain steps
- Very deep, somewhat poorly drained, loamy soils in drainageways

**NbhAH—Newark silt loam, 0 to 2 percent
slopes, frequently flooded, brief
duration**

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Parent material: Silty alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Depth to water table: 0.5 foot to 2.0 feet (apparent)

Available water capacity to a depth of 60 inches: About 11.6 inches

Composition

Newark and similar soils: 93 percent

Dissimilar components: 7 percent

- Very deep, moderately well drained, silty soils on the higher lying flood-plain steps
- Birds and Wilhite soils in backswamps and drainageways

**OfaAV—Oldenburg silt loam, 0 to 2
percent slopes, frequently flooded,
very brief duration**

Setting

Landform: Flood plains (fig. 5)

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Parent material: Loamy alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.5 feet (apparent)

Available water capacity to a depth of 60 inches: About 10.2 inches

Composition

Oldenburg and similar soils: 83 percent

Dissimilar components: 17 percent

- Holton soils in drainageways
- Wirt soils on natural levees and intermixed throughout the unit

**OfcAV—Oldenburg fine sandy loam,
sandy substratum, 0 to 2 percent
slopes, frequently flooded, very brief
duration**

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Parent material: Loamy over sandy alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.5 feet (apparent)

Available water capacity to a depth of 60 inches: About 7.8 inches

Composition

Oldenburg and similar soils: 90 percent

Dissimilar components: 10 percent

- Holton soils in drainageways
- Pope soils on narrow flood plains and alluvial fans



Figure 5.—A young corn crop will have to be replanted because of the floodwaters covering this area of Oldenburg silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration. Oldenburg soils are generally suited to growing corn, but when flooding occurs during the growing season the crops will be damaged.

OfeB—Elephant silt loam, 1 to 3 percent slopes

Setting

Landform: Lake plains

Position on the landform: Nearly level flats

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Depth to water table: 3.5 to 5.0 feet (perched)

Available water capacity to a depth of 60 inches:
About 10.8 inches

Composition

Elephant and similar soils: 95 percent

Dissimilar components: 5 percent

- Haubstadt soils that have slopes of 0 to 2 percent; on slightly lower lying flats

OmkC2—Otwell silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Dissected lake plains

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 2 to 3 feet (perched)

Available water capacity to a depth of 60 inches:
About 6.9 inches

Composition

Otwell and similar soils: 73 percent

Dissimilar components: 27 percent

- Otwell soils that have slopes of 6 to 12 percent and are severely eroded; on shoulders and backslopes and intermixed throughout the unit

- Stendal soils on toeslopes
- Haubstadt soils that have slopes of 2 to 6 percent; on summits
- Otwell soils that have slopes of 12 to 18 percent; on backslopes

OmkC3—Otwell silt loam, 6 to 12 percent slopes, severely eroded

Setting

Landform: Dissected lake plains

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 6.2 inches

Composition

Otwell and similar soils: 73 percent

Dissimilar components: 27 percent

- Otwell soils that have slopes of 6 to 12 percent and are slightly or moderately eroded; on shoulders and backslopes and intermixed throughout the unit
- Stendal soils on toeslopes
- Haubstadt soils that have slopes of 2 to 6 percent; on summits
- Otwell soils that have slopes of 12 to 18 percent; on backslopes

OmkD3—Otwell silt loam, 12 to 18 percent slopes, severely eroded

Setting

Landform: Dissected lake plains

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 6.1 inches

Composition

Otwell and similar soils: 72 percent

Dissimilar components: 28 percent

- Otwell soils that have slopes of 12 to 18 percent and are slightly or moderately eroded; on backslopes
- Very deep, somewhat poorly drained, loamy soils on toeslopes
- Greybrook soils that have slopes of 18 to 25 percent; on backslopes
- Otwell soils that have slopes of 6 to 12 percent; on shoulders and the upper part of backslopes

PbbC2—Parke silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Dissected outwash plains

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 10.1 inches

Composition

Parke and similar soils: 91 percent

Dissimilar components: 9 percent

- Pike soils that have slopes of 2 to 6 percent; on summits
- Parke soils that have slopes of 12 to 18 percent; on backslopes

PbbC3—Parke silt loam, 6 to 12 percent slopes, severely eroded

Setting

Landform: Dissected outwash plains

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.9 inches

Composition

Parke and similar soils: 91 percent

Dissimilar components: 9 percent

- Pike soils that have slopes of 2 to 6 percent; on summits
- Parke soils that have slopes of 12 to 18 percent; on backslopes

PbbD2—Parke silt loam, 12 to 18 percent slopes, eroded

Setting

Landform: Dissected outwash plains

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 10.1 inches

Composition

Parke and similar soils: 82 percent

Dissimilar components: 18 percent

- Chetwynd soils that have slopes of 12 to 25 percent; on backslopes and intermixed throughout the unit
- Parke soils that have slopes of 6 to 12 percent; on shoulders
- Pike soils that have slopes of 2 to 6 percent; on shoulders and summits

PbbD3—Parke silt loam, 12 to 18 percent slopes, severely eroded

Setting

Landform: Dissected outwash plains

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.9 inches

Composition

Parke and similar soils: 82 percent

Dissimilar components: 18 percent

- Chetwynd soils that have slopes of 12 to 25 percent; on backslopes and intermixed throughout the unit

- Parke soils that have slopes of 6 to 12 percent; on shoulders
- Pike soils that have slopes of 2 to 6 percent; on shoulders and summits

PcnA—Patrickburg silt loam, 0 to 2 percent slopes

Setting

Landform: Hills underlain with interbedded sandstone, shale, and siltstone

Position on the landform: Nearly level summits

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy residuum

Depth class: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Depth to water table: 0.5 foot to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 7.2 inches

Composition

Patrickburg and similar soils: 90 percent

Dissimilar components: 10 percent

- Potawatomi soils that have slopes of 1 to 3 percent; on shoulders and summits
- Very deep, poorly drained, silty soils in shallow depressions

PcrAQ—Pekin silt loam, 0 to 2 percent slopes, rarely flooded

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Parent material: Thin loess and alluvium or alluvium

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 8.0 inches

Composition

Pekin and similar soils: 90 percent

Dissimilar components: 10 percent

- Very deep, well drained, silty soils on shoulders and summits and intermixed throughout the unit

- Very deep, somewhat poorly drained, silty soils in drainageways
- Very deep, somewhat poorly drained, silty soils on flats

PcrB2—Pekin silt loam, 2 to 6 percent slopes, eroded

Setting

Landform: Stream terraces

Position on the landform: Treads

Soil Properties and Qualities

Parent material: Thin loess and alluvium or alluvium

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 8.0 inches

Composition

Pekin and similar soils: 90 percent

Dissimilar components: 10 percent

- Very deep, somewhat poorly drained, silty soils on flats
- Pekin soils that have slopes of 6 to 12 percent; on backslopes

PcrC2—Pekin silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Stream terraces

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Thin loess and alluvium or alluvium

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 8.0 inches

Composition

Pekin and similar soils: 88 percent

Dissimilar components: 12 percent

- Pottersville soils that have slopes of 6 to 18 percent; on shoulders and backslopes

- Pekin soils that have slopes of 2 to 6 percent; on shoulders and summits
- Very deep, somewhat poorly drained, silty soils on toeslopes

PhaA—Peoga silt loam, 0 to 1 percent slopes

Setting

Landform: Lake plains

Position on the landform: Flats

Soil Properties and Qualities (fig. 6)

Parent material: Loess and a paleosol in loamy lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Poorly drained

Depth to water table: 0 to 1 foot (perched)

Ponding: 0.5 foot

Available water capacity to a depth of 60 inches: About 9.7 inches

Composition

Peoga and similar soils: 73 percent

Dissimilar components: 27 percent

- Peoga soils that are undrained
- Dubois soils on slight rises
- Very deep, very poorly drained, clayey soils in shallow, closed depressions

PhaAP—Peoga silt loam, ponded, 0 to 1 percent slopes

Setting

Landform: Outwash plains

Position on the landform: Depressions

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Very poorly drained

Depth to water table: 0.0 to 0.5 foot (perched)

Ponding: 2 foot

Available water capacity to a depth of 60 inches: About 12.3 inches

Composition

Peoga and similar soils: 95 percent

Dissimilar components: 5 percent

- Taggart soils on slight rises

PlcAV—Piankeshaw silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration

Setting

Landform: Flood plains

Position on the landform: Natural levees, flood-plain steps, and alluvial fans

Soil Properties and Qualities

Parent material: Loamy and channery alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 7.2 inches

Composition

Piankeshaw and similar soils: 77 percent

Dissimilar components: 23 percent

- Wirt soils on narrow flood plains and alluvial fans
- Deep or moderately deep, well drained, very channery soils intermixed throughout the unit

- Oldenburg soils in drainageways and intermixed throughout the unit

PlfA—Pike silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains

Position on the landform: Flats

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 10.6 inches

Composition

Pike and similar soils: 92 percent

Dissimilar components: 8 percent

- Pike soils that have slopes of 2 to 6 percent; on shoulders



Figure 6.—These soybeans are growing on Peoga soils. When these poorly drained soils are drained, they are fairly well suited to growing corn and soybeans. The house and other buildings in the background are built on Haubstadt soils.

P1fB2—Pike silt loam, 2 to 6 percent slopes, eroded

Setting

Landform: Dissected outwash plains

Position on the landform: Shoulders and summits

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 10.6 inches

Composition

Pike and similar soils: 92 percent

Dissimilar components: 8 percent

- Pike soils that have slopes of 0 to 2 percent; on narrow, elongated flats
- Parke soils that have slopes of 6 to 12 percent; on shoulders and backslopes

Pml—Pits, quarry

General Description

This map unit consists of areas where the surface soil has been removed and limestone bedrock has been extracted for construction material. Most of the area is the actual pit, and some of the area is piles of broken rock or mixed rock and soil material (fig. 7).

Composition

Pits, quarry: 85 percent

Dissimilar components: 15 percent

- Very deep, well drained, loamy or clayey soils that have 6 to 90 percent slopes; on spoil hills
- Poned water

PrwAV—Pope fine sandy loam, 0 to 2 percent slopes, frequently flooded, very brief duration

Setting

Landform: Flood plains

Position on the landform: Natural levees and flood-plain steps

Soil Properties and Qualities

Parent material: Acid loamy alluvium



Figure 7.—Limestone underlying the Stinesville soil is being quarried for building material from an area of Pits, quarry.

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 8.1 inches

Composition

Pope and similar soils: 80 percent

Dissimilar components: 20 percent

- Wirt soils intermixed throughout the unit
- Oldenburg soils on the lower lying flood-plain steps
- Holton soils in drainageways

PryB—Potawatomi silt loam, 1 to 3 percent slopes

Setting

Landform: Hills underlain with interbedded sandstone, shale, and siltstone

Position on the landform: Summits

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy residuum

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1 to 2 feet (perched)

Available water capacity to a depth of 60 inches: About 8.2 inches

Composition

Potawatomi and similar soils: 87 percent

Dissimilar components: 13 percent

- Patricksburg soils on head slopes
- Zanesville, soft bedrock substratum, soils that have slopes of 3 to 6 percent; on shoulders and backslopes

PsaD3—Pottersville silt loam, 12 to 18 percent slopes, severely eroded

Setting

Landform: Dissected lake plains

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in calcareous, fine textured lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.4 inches

Composition

Pottersville and similar soils: 92 percent

Dissimilar components: 8 percent

- Otwell soils that have slopes of 6 to 12 percent; on shoulders

PsaG—Pottersville silt loam, 25 to 50 percent slopes

Setting

Landform: Dissected lake plains

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in calcareous, fine textured lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.7 inches

Composition

Pottersville and similar soils: 85 percent

Dissimilar components: 15 percent

- Otwell soils that have slopes of 2 to 12 percent; on shoulders and summits
- Very deep, somewhat poorly drained, silty soils on toeslopes
- Pottersville soils that have slopes of 12 to 25 percent; on shoulders and backslopes

PsbF—Pottersville silt loam, karst, steep

Setting

Landform: Sinkholes on dissected lake plains

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in calcareous, fine textured lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.7 inches

Composition

Pottersville and similar soils: 85 percent

Dissimilar components: 15 percent

- Pottersville soils that have slopes of 4 to 12 percent; on shoulders and summits
- Haymond soils on toeslopes within sinkholes

Rnn—Riverwash

General Description

This map unit consists of areas, mainly adjacent to the White River channel, where sand and gravelly sand sediment is frequently flooded and reworked. These units are frequently reshaped and are sometimes relocated after major flooding events.

Composition

Riverwash: 95 percent

Dissimilar components: 5 percent

- Moundhaven soils on natural levees and intermixed throughout the unit

RpzG—Romona-Corydon-Rock outcrop complex, 35 to 60 percent slopes

Setting

Landform: Hills underlain with limestone

Position on the landform: Backslopes

Soil Properties and Qualities

Romona

Parent material: Clayey residuum

Depth class: Moderately deep (20 to 40 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 2.9 inches

Corydon

Parent material: Clayey residuum

Depth class: Shallow (10 to 20 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 2.3 inches

Composition

Romona and similar soils: 39 percent

Corydon and similar soils: 27 percent

Rock outcrop: 17 percent

Dissimilar components: 17 percent

- Very shallow, well drained, clayey soils that have slopes of 35 to 60 percent; on backslopes and intermixed throughout the unit
- Caneyville and Hickory soils that have slopes of 25 to 60 percent; on backslopes and intermixed throughout the unit

RtcC3—Ryker silt loam, 6 to 12 percent slopes, severely eroded

Setting

Landform: Dissected till plains over limestone

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in till and clayey residuum

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 10.2 inches

Composition

Ryker and similar soils: 78 percent

Dissimilar components: 22 percent

- Stinesville soils that have slopes of 2 to 12 percent; on shoulders and summits and intermixed throughout the unit
- Grayford soils that have slopes of 6 to 18 percent; on shoulders and backslopes and intermixed throughout the unit

- Ryker soils that have slopes of 6 to 12 percent; within sinkholes
- Very deep, moderately well drained, silty soils on backslopes and intermixed throughout the unit

SfoA—Shakamak silt loam, 1 to 3 percent slopes

Setting

Landform: Dissected till plains

Position on the landform: Summits

Soil Properties and Qualities

Parent material: Loess and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2 feet (perched)

Available water capacity to a depth of 60 inches: About 8.1 inches

Composition

Shakamak and similar soils: 80 percent

Dissimilar components: 20 percent

- Vigo soils on narrow, elongated flats
- Ava soils that have slopes of 3 to 6 percent; on shoulders and summits

SfyB2—Shircliff silt loam, 2 to 6 percent slopes, eroded

Setting

Landform: Dissected lake plains

Position on the landform: Shoulders and summits

Soil Properties and Qualities

Parent material: Thin loess and a paleosol in calcareous, fine textured lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.5 feet (perched)

Available water capacity to a depth of 60 inches: About 10.3 inches

Composition

Shircliff and similar soils: 90 percent

Dissimilar components: 10 percent

- McGary soils on narrow, elongated flats
- Shircliff soils that have slopes of 6 to 12 percent; on shoulders and backslopes
- Very deep, well drained, clayey soils that have slopes of 12 to 25 percent; on backslopes

SfyC2—Shircliff silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Dissected lake plains

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Thin loess and a paleosol in calcareous, fine textured lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.5 feet (perched)

Available water capacity to a depth of 60 inches: About 10.2 inches

Composition

Shircliff and similar soils: 82 percent

Dissimilar components: 18 percent

- Shircliff soils that have slopes of 6 to 12 percent and are severely eroded; on backslopes and intermixed throughout the unit
- Shircliff soils that have slopes of 1 to 6 percent; on summits
- Very deep, somewhat poorly drained, silty soils in drainageways and on footslopes
- Very deep, well drained, clayey soils that have slopes of 12 to 35 percent; on backslopes

SneC2—Solsberry silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Dissected till plains

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess, loamy material, and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.5 feet (perched)

Available water capacity to a depth of 60 inches: About 7.0 inches

Composition

Solsberry and similar soils: 73 percent

Dissimilar components: 27 percent

- Solsberry soils that have slopes of 6 to 12 percent and are severely eroded; on shoulders and backslopes and intermixed throughout the unit
- Solsberry soils that have slopes of 12 to 18 percent; on backslopes

- Ava and Cincinnati soils that have slopes of 2 to 6 percent; on summits
- Holton soils on toeslopes
- Wellston soils that have slopes of 6 to 18 percent; on backslopes and intermixed throughout the unit

SneC3—Solsberry silt loam, 6 to 12 percent slopes, severely eroded

Setting

Landform: Dissected till plains

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess, loamy material, and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.5 feet (perched)

Available water capacity to a depth of 60 inches: About 6.5 inches

Composition

Solsberry and similar soils: 73 percent

Dissimilar components: 27 percent

- Solsberry soils that have slopes of 6 to 12 percent and are slightly or moderately eroded; on shoulders and backslopes and intermixed throughout the unit
- Solsberry soils that have slopes of 12 to 18 percent; on backslopes
- Ava and Cincinnati soils that have slopes of 2 to 6 percent; on summits
- Holton soils on toeslopes
- Wellston soils that have slopes of 6 to 18 percent; on backslopes and intermixed throughout the unit

SneD2—Solsberry silt loam, 12 to 18 percent slopes, eroded

Setting

Landform: Dissected till plains

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Loess, loamy material, and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.5 feet (perched)

Available water capacity to a depth of 60 inches: About 7.0 inches

Composition

Solsberry and similar soils: 75 percent

Dissimilar components: 25 percent

- Solsberry soils that have slopes of 12 to 18 percent and are severely eroded; on backslopes and intermixed throughout the unit
- Solsberry soils that have slopes of 6 to 12 percent; on shoulders
- Holton soils on toeslopes
- Hickory soils that have slopes of 12 to 25 percent; on backslopes and intermixed throughout the unit
- Wellston soils that have slopes of 12 to 18 percent; on backslopes and intermixed throughout the unit

SneD3—Solsberry silt loam, 12 to 18 percent slopes, severely eroded

Setting

Landform: Dissected till plains

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Loess, loamy material, and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.5 feet (perched)

Available water capacity to a depth of 60 inches: About 6.5 inches

Composition

Solsberry and similar soils: 75 percent

Dissimilar components: 25 percent

- Solsberry soils that have slopes of 12 to 18 percent and are slightly or moderately eroded; on backslopes and intermixed throughout the unit
- Solsberry soils that have slopes of 6 to 12 percent; on shoulders
- Holton soils on toeslopes
- Wellston soils that have slopes of 12 to 18 percent; on backslopes and intermixed throughout the unit
- Hickory soils that have slopes of 12 to 25 percent; on backslopes and intermixed throughout the unit

SneD5—Solsberry silt loam, 12 to 18 percent slopes, gullied

Setting

Landform: Dissected till plains

Position on the landform: Backslopes

Other features: Between 25 and 40 percent of this map unit is gullied. The gullied areas consist of a network of mostly U-shaped channels averaging 2 to 4 feet in depth.

Soil Properties and Qualities

Parent material: Loess, loamy material, and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.5 feet (perched)

Available water capacity to a depth of 60 inches: About 5.7 inches

Composition

Solsberry and similar soils: 74 percent

Dissimilar components: 26 percent

- Solsberry soils that have slopes of 6 to 18 percent and are slightly or moderately eroded; on shoulders and backslopes between gullies
- Hickory and Wellston soils that have slopes of 12 to 18 percent; on backslopes and intermixed throughout the unit
- Chetwynd, Gallimore, and Parke soils that have slopes of 12 to 18 percent; on backslopes of dissected outwash plains

StaAV—Steff silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Parent material: Acid silty alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.5 feet (apparent)

Available water capacity to a depth of 60 inches: About 11.9 inches

Composition

Steff and similar soils: 85 percent

Dissimilar components: 15 percent

- Belknap soils in drainageways and on the lower lying flood-plain steps
- Very deep, well drained, silty soils on natural levees and intermixed throughout the unit
- Oldenburg soils on natural levees and intermixed throughout the unit

StdAH—Stendal silt loam, 0 to 2 percent slopes, frequently flooded, brief duration

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities (fig. 8)

Parent material: Acid silty alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Depth to water table: 0.5 foot to 2.0 feet (apparent)

Available water capacity to a depth of 60 inches: About 12.8 inches

Composition

Stendal and similar soils: 85 percent

Dissimilar components: 15 percent

- Steff soils on the higher lying flood-plain steps
- Bonnie soils in backswamps and drainageways

StfB2—Stinesville silt loam, 2 to 6 percent slopes, eroded

Setting

Landform: Dissected till plains over limestone



Figure 8.—These soils are well suited to no-till farming. The former corn residue in this field conserves moisture and reduces the hazard of crusting. The wetness and the flooding hazards are management concerns of this Stendal soil (Scott County, IN).

Position on the landform: Shoulders and summits

Soil Properties and Qualities

Parent material: Loess and a paleosol in till and clayey residuum

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 11.0 inches (fig. 9)

Composition

Stinesville and similar soils: 96 percent

Dissimilar components: 4 percent

- Stinesville soils that have slopes of 6 to 12 percent; on shoulders and the upper part of backslopes
- Stinesville soils that have slopes of 2 to 12 percent; in sinkholes

StfC2—Stinesville silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Dissected till plains over limestone



Figure 9.—An area of Stinesville silt loam, 2 to 6 percent slopes, eroded, is being used for the production of apples. This soil is very well suited to use as apple orchards because of the high water-holding capacity and because it does not have a high water table or a root-restricting layer.

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in till and clayey residuum

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 10.9 inches

Composition

Stinesville and similar soils: 94 percent

Dissimilar components: 6 percent

- Stinesville soils that have slopes of 2 to 6 percent; on summits
- Stinesville soils that have slopes of 6 to 12 percent; within sinkholes

StgC2—Stinesville-Ryker-Grayford silt loams, karst, rolling, eroded

Setting

Landform: Sinkholes within dissected till plains over limestone

Position on the landform: Summits, shoulders, and backslopes

Soil Properties and Qualities (fig. 10)

Stinesville

Parent material: Loess and a paleosol in till and clayey residuum

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 10.7 inches



Figure 10.—An area of Stinesville-Ryker-Grayford silt loams, karst, rolling, eroded, is being used for growing a mixed stand of alfalfa and orchardgrass for hay. These soils are well suited for hay production. A potential pollution of ground-water supplies is a hazard for this and other karst map units.

Ryker

Parent material: Loess and a paleosol in till and clayey residuum

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.9 inches

Grayford

Parent material: Thin loess and a paleosol in till and clayey residuum

Depth class: Deep (40 to 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 7.4 inches

Composition

Stinesville and similar soils: 43 percent

Ryker and similar soils: 28 percent

Grayford and similar soils: 24 percent

Dissimilar components: 5 percent

- Haymond soils on toeslopes within sinkholes

StgD2—Stinesville-Ryker-Grayford silt loams, karst, hilly, eroded**Setting**

Landform: Sinkholes within dissected till plains over limestone

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities**Stinesville**

Parent material: Loess and a paleosol in till and clayey residuum

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 10.6 inches

Ryker

Parent material: Loess and a paleosol in till and clayey residuum

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.9 inches

Grayford

Parent material: Thin loess and a paleosol in till and clayey residuum

Depth class: Deep (40 to 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 6.3 inches

Composition

Stinesville and similar soils: 40 percent

Ryker and similar soils: 27 percent

Grayford and similar soils: 23 percent

Dissimilar components: 10 percent

- Haymond soils on toeslopes within sinkholes
- Stinesville soils that have slopes of 1 to 4 percent; on summits
- Caneyville soils that have slopes of 12 to 25 percent; on backslopes

SupAH—Stonelick sandy loam, 0 to 2 percent slopes, frequently flooded, brief duration**Setting**

Landform: Flood plains

Position on the landform: Natural levees and flood-plain steps

Soil Properties and Qualities

Parent material: Calcareous loamy alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 7.6 inches

Composition

Stonelick and similar soils: 92 percent

Dissimilar components: 8 percent

- Moundhaven soils on natural levees and intermixed throughout the unit
- Gessie soils intermixed throughout the unit

SwhG—Stubenville-Hickory complex, 35 to 70 percent slopes**Setting**

Landform: Dissected lake plain over till

Position on the landform: Backslopes

Soil Properties and Qualities

Stubenville

Parent material: Silty lacustrine sediments

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 10.7 inches

Hickory

Parent material: Till

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 8.6 inches

Composition

Stubenville and similar soils: 51 percent

Hickory and similar soils: 40 percent

Dissimilar components: 9 percent

- Holton soils on toeslopes
- Otwell soils that have slopes of 6 to 18 percent; on shoulders and the upper part of backslopes
- Haubstadt soils that have slopes of 2 to 6 percent; on summits

TadA—Taggart silt loam, 0 to 2 percent slopes

Setting

Landform: Outwash plains

Position on the landform: Flats

Soil Properties and Qualities

Parent material: Loess or silty sediments and a paleosol in loamy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Somewhat poorly drained

Depth to water table: 0.5 foot to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 11.7 inches

Composition

Taggart and similar soils: 90 percent

Dissimilar components: 10 percent

- Peoga soils in shallow depressions
- Very deep, moderately well drained, silty soils on slight rises

TahB—Tapawingo and Nawakwa silt loams, 2 to 8 percent slopes

Setting

Landform: Reconstructed plains and gently sloping hills from surface mining operations

Position on the landform: Summits, shoulders, and backslopes

Soil Properties and Qualities

Tapawingo

Parent material: Loamy soil materials overlying graded shaly regolith

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 5.1 inches

Nawakwa

Parent material: Loamy soil materials overlying graded shaly regolith

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 5.1 inches

Composition

Tapawingo and similar soils: 58 percent

Nawakwa and similar soils: 36 percent

Dissimilar components: 6 percent

- Ponded water
- Very deep, loamy soils in excavated areas intermixed throughout the unit

TcgG—Tipsaw-Rock outcrop complex, 35 to 70 percent slopes

Setting

Landform: Hills underlain with interbedded sandstone, shale, and siltstone

Position on the landform: Backslopes

Soil Properties and Qualities

Tipsaw

Parent material: Loamy residuum

Depth class: Moderately deep (20 to 40 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 3.2 inches

Composition

Tipsaw and similar soils: 53 percent

Rock outcrop: 22 percent (fig. 11)

Dissimilar components: 25 percent

- Adyeville and Hickory soils that have slopes of 25 to 60 percent; on backslopes and intermixed throughout the unit
- Shallow, well drained, loamy soils that have slopes of 45 to 70 percent; on backslopes and intermixed throughout the unit
- Tipsaw soils that have slopes of 25 to 35 percent; on backslopes
- Piankeshaw soils on toeslopes

TtaG—Tulip-Tipsaw complex, 25 to 60 percent slopes

Setting

Landform: Structural benches and scarps underlain with interbedded sandstone, shale, and siltstone

Position on the landform: Backslopes and footslopes



Figure 11.—An area of rock outcrop within an area of Tipsaw-rock outcrop complex, 35 to 70 percent slopes.

Soil Properties and Qualities

Tulip

Parent material: Colluvium and a paleosol in clayey residuum

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Depth to water table: 2.5 to 3.5 feet (perched)

Available water capacity to a depth of 60 inches: About 9.4 inches

Tipsaw

Parent material: Loamy residuum

Depth class: Moderately deep (20 to 40 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 3.2 inches

Composition

Tulip and similar soils: 59 percent

Tipsaw and similar soils: 25 percent

Dissimilar components: 16 percent

- Adyeville soils that have slopes of 25 to 60 percent; in areas on the upper part of backslopes
- Wellston soils that have slopes of 12 to 18 percent; on shoulders and the upper part of backslopes
- Zanesville, soft bedrock substratum, soils that have slopes of 6 to 18 percent; on shoulders and summits
- Piankeshaw soils on toeslopes
- Hickory soils that have slopes of 35 to 60 percent; on backslopes and intermixed throughout the unit

TtcE—Tulip-Wellston-Adyeville silt loams, 18 to 25 percent slopes

Setting

Landform: Structural benches and scarps underlain with interbedded sandstone, shale, and siltstone

Position on the landform: Backslopes and footslopes

Soil Properties and Qualities

Tulip

Parent material: Colluvium and a paleosol in clayey residuum

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Depth to water table: 2.5 to 3.5 feet (perched)

Available water capacity to a depth of 60 inches: About 9.4 inches

Wellston

Parent material: Loess and loamy residuum

Depth class: Deep (40 to 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 8.1 inches

Adyeville

Parent material: Loamy residuum

Depth class: Moderately deep (20 to 40 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 5.4 inches

Composition

Tulip and similar soils: 38 percent

Wellston and similar soils: 25 percent

Adyeville and similar soils: 21 percent

Dissimilar components: 16 percent

- Tulip soils that have slopes of 12 to 18 percent; on footslopes
- Wellston soils that have slopes of 12 to 18 percent; on the lower part of backslopes
- Zanesville, soft bedrock substratum, soils that have slopes of 2 to 12 percent; on shoulders and summits
- Ebal soils that have slopes of 18 to 25 percent; on footslopes
- Piankeshaw soils on toeslopes

Uaa—Udorthents, cut and filled

General Description

Because of the extreme variability of these soils, no typical soil series is representative of these soils.

Generally, they consist of areas with mixed, loamy soil materials or a combination of mixed soil materials and refuse materials that have been created by human activity. Included are earthen dams, spillways, fill for highway interchanges, sanitary landfills, and other areas where various thicknesses of soil material have been removed and areas where various thicknesses of soil material have been placed.

Composition

Udorthents and similar soils: 80 percent

Dissimilar components: 20 percent

- Udorthents, rarely or occasionally flooded, on flood-plain steps
- Urban land intermixed throughout the unit and typically adjacent to commercial and residential areas and building sites
- Rock outcrop in excavated areas

VdgA—Vigo silt loam, 0 to 2 percent slopes

Setting

Landform: Till plains

Position on the landform: Nearly level summits

Soil Properties and Qualities

Parent material: Loess and a paleosol in till

Depth class: Very deep (more than 80 inches)

Drainage class: Somewhat poorly drained

Depth to water table: 0.5 foot to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 9.9 inches

Composition

Vigo and similar soils: 87 percent

Dissimilar components: 13 percent

- Shakamak soils that have slopes of 1 to 3 percent; on summits
- Very deep, poorly drained, silty soils in shallow, closed depressions and on head slopes

WeaA—Wea, sandy substratum-Elston complex, 0 to 2 percent slopes

Setting

Landform: Stream terraces

Position on the landform: Treads

Soil Properties and Qualities

Wea

Parent material: Loamy over gravelly sand outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 6.8 inches

Elston

Parent material: Loamy over sandy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 8.0 inches

Composition

Wea and similar soils: 63 percent

Elston and similar soils: 27 percent

Dissimilar components: 10 percent

- Very deep, well drained, loamy soils that have slopes of 0 to 2 percent
- Alvin soils that have slopes of 1 to 4 percent
- Whitaker soils in drainageways

WeaAQ—Wea, sandy substratum-Elston complex, 0 to 2 percent slopes, rarely flooded

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Wea

Parent material: Loamy over gravelly sand outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 6.8 inches

Elston

Parent material: Loamy over sandy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 8.0 inches

Composition

Wea and similar soils: 66 percent

Elston and similar soils: 29 percent

Dissimilar components: 5 percent

- Whitaker soils in drainageways

WhfD2—Wellston silt loam, 12 to 18 percent slopes, eroded

Setting

Landform: Hills underlain with interbedded sandstone, shale, and siltstone

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Loess and loamy residuum

Depth class: Deep (40 to 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 8.1 inches

Composition

Wellston and similar soils: 85 percent

Dissimilar components: 15 percent

- Zanesville, soft bedrock substratum, soils that have slopes of 6 to 18 percent; on shoulders and the upper part of backslopes
- Tulip soils that have slopes of 12 to 18 percent; on footslopes
- Adyeville soils that have slopes of 12 to 25 percent; on shoulders and backslopes and intermixed throughout the unit

WlmAK—Whitaker loam, 0 to 2 percent slopes, occasionally flooded, brief duration

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Parent material: Loamy outwash

Depth class: Very deep (more than 80 inches)

Drainage class: Somewhat poorly drained

Depth to water table: 0.5 foot to 2.0 feet (apparent)

Available water capacity to a depth of 60 inches: About 9.8 inches

Composition

Whitaker and similar soils: 92 percent

Dissimilar components: 8 percent

- Very deep, moderately well drained, loamy, occasionally flooded, soils on slight rises
- Martinsville soils, rarely flooded, on the higher lying flood-plain steps

WokAH—Wilbur silt loam, 0 to 2 percent slopes, frequently flooded, brief duration

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Parent material: Silty alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.5 feet (apparent)

Available water capacity to a depth of 60 inches: About 12.9 inches

Composition

Wilbur and similar soils: 83 percent

Dissimilar components: 17 percent

- Very deep, somewhat poorly drained, silty soils in drainageways
- Haymond and Wirt soils on natural levees and intermixed throughout the unit

WoIAI—Wilhite silty clay, 0 to 1 percent slopes, frequently flooded, long duration

Setting

Landform: Flood plains

Position on the landform: Backswamps

Soil Properties and Qualities

Parent material: Fine textured alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Poorly drained

Depth to water table: 0 to 1 foot (apparent)

Ponding: 0.5 foot

Available water capacity to a depth of 60 inches: About 8.0 inches

Composition

Wilhite and similar soils: 96 percent

Dissimilar components: 4 percent

- Very deep, poorly drained, moderately fine textured soils intermixed throughout the unit

WomAH—Wilhite silty clay loam, 0 to 1 percent slopes, frequently flooded, brief duration

Setting

Landform: Flood plains

Position on the landform: Backswamps

Soil Properties and Qualities

Parent material: Fine textured alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Poorly drained

Depth to water table: 0 to 1 foot (apparent)

Ponding: 0.5 foot

Available water capacity to a depth of 60 inches: About 8.5 inches

Composition

Wilhite and similar soils: 92 percent

Dissimilar components: 8 percent

- Newark soils on the higher lying flood-plain steps
- Very deep, poorly drained, moderately fine textured soils intermixed throughout the unit

WprAQ—Wirt loam, 0 to 2 percent slopes, rarely flooded

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Parent material: Loamy alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.4 inches

Composition

Wirt and similar soils: 90 percent

Dissimilar components: 10 percent

- Martinsville soils, rarely flooded, on the higher lying flood-plain steps
- Wirt soils, occasionally flooded, on the lower lying flood-plain steps

WpuAK—Wirt silt loam, 0 to 2 percent slopes, occasionally flooded, brief duration

Setting

Landform: Flood plains

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Parent material: Loamy alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.2 inches

Composition

Wirt and similar soils: 90 percent

Dissimilar components: 10 percent

- Stonelick soils on natural levees and intermixed throughout the unit
- Wirt soils, frequently flooded, intermixed throughout the unit

WpuAV—Wirt silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration

Setting

Landform: Flood plains (fig. 12)

Position on the landform: Natural levees and flood-plain steps

Soil Properties and Qualities

Parent material: Loamy alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 9.2 inches

Composition

Wirt and similar soils: 86 percent

Dissimilar components: 14 percent

- Oldenburg soils on the lower lying flood-plain steps

- Haymond soils intermixed throughout the unit
- Wirt soils, occasionally flooded, on narrow flood plains and alluvial fans
- Holton soils in drainageways

WpyBJ—Wirt-Pekin silt loams, 0 to 6 percent slopes, frequently flooded, very long duration

Setting

Landform: Flood plains within Cataract Lake

Position on the landform: Flood-plain steps

Soil Properties and Qualities

Wirt

Parent material: Loamy alluvium

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Available water capacity to a depth of 60 inches: About 10.6 inches



Figure 12.—Walnut trees are growing well on this area of Wirt silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration. Although these Wirt soils are subject to frequent periods of flooding, the duration is very brief and generally floodwaters do not significantly affect tree growth.

Pekin

Parent material: Thin loess and alluvium or alluvium

Depth class: Very deep (more than 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.0 feet (perched)

Available water capacity to a depth of 60 inches: About 7.8 inches

Composition

Wirt and similar soils: 53 percent

Pekin and similar soils: 23 percent

Dissimilar components: 24 percent

- Oldenburg, Wilbur, Wakeland, and Holton soils, frequently flooded, intermixed throughout the unit
- Pekin soils that have slopes of 6 to 12 percent and are frequently flooded; on shoulders and backslopes
- Very deep, well drained, loamy soils that have slopes of 12 to 25 percent and are frequently flooded; on backslopes

ZamB2—Zanesville silt loam, soft bedrock substratum, 2 to 6 percent slopes, eroded**Setting**

Landform: Hills underlain with interbedded sandstone, shale, and siltstone

Position on the landform: Shoulders and summits

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy to clayey residuum

Depth class: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Depth to water table: 2 to 3 feet (perched)

Available water capacity to a depth of 60 inches: About 7.4 inches

Composition

Zanesville and similar soils: 88 percent

Dissimilar components: 12 percent

- Potawatomi soils that have slopes of 1 to 3 percent; on summits
- Zanesville, soft bedrock substratum, soils that have slopes of 6 to 12 percent; on shoulders and backslopes
- Solsberry soils that have slopes of 2 to 6 percent; on shoulders and summits and intermixed throughout the unit

ZamC2—Zanesville silt loam, soft bedrock substratum, 6 to 12 percent slopes, eroded**Setting**

Landform: Hills underlain with interbedded sandstone, shale, and siltstone

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy to clayey residuum

Depth class: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Depth to water table: 2 to 3 feet (perched)

Available water capacity to a depth of 60 inches: About 7.2 inches

Composition

Zanesville and similar soils: 72 percent

Dissimilar components: 28 percent

- Zanesville, soft bedrock substratum, soils that have slopes of 6 to 12 percent and are severely eroded; on shoulders and backslopes and intermixed throughout the unit
- Zanesville, soft bedrock substratum, soils that have slopes of 12 to 18 percent; on backslopes
- Wellston soils that have slopes of 6 to 12 percent; on shoulders and backslopes and intermixed throughout the unit
- Zanesville, soft bedrock substratum, soils that have slopes of 2 to 6 percent; on summits

ZamC3—Zanesville silt loam, soft bedrock substratum, 6 to 12 percent slopes, severely eroded**Setting**

Landform: Hills underlain with interbedded sandstone, shale, and siltstone

Position on the landform: Shoulders and backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy to clayey residuum

Depth class: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.5 feet (perched)

Available water capacity to a depth of 60 inches: About 6.3 inches

Composition

Zanesville and similar soils: 72 percent

Dissimilar components: 28 percent

- Zanesville, soft bedrock substratum, soils that have slopes of 6 to 12 percent and are slightly or moderately eroded; on shoulders and backslopes and intermixed throughout the unit
- Zanesville, soft bedrock substratum, soils that have slopes of 12 to 18 percent; on backslopes
- Wellston soils that have slopes of 12 to 18 percent; on shoulders and backslopes and intermixed throughout the unit
- Zanesville, soft bedrock substratum, soils that have slopes of 2 to 6 percent; on summits

ZamD2—Zanesville silt loam, soft bedrock substratum, 12 to 18 percent slopes, eroded

Setting

Landform: Hills underlain with interbedded sandstone, shale, and siltstone

Position on the landform: Backslopes

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy to clayey residuum

Depth class: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Depth to water table: 2 to 3 feet (perched)

Available water capacity to a depth of 60 inches: About 6.7 inches

Composition

Zanesville and similar soils: 70 percent

Dissimilar components: 30 percent

- Zanesville, soft bedrock substratum, soils that have slopes of 12 to 18 percent and are slightly or moderately eroded; on backslopes and intermixed throughout the unit
- Tulip soils that have slopes of 12 to 18 percent; on footslopes
- Wellston soils that have slopes of 12 to 18 percent; on backslopes and intermixed throughout the unit
- Zanesville, soft bedrock substratum, soils that have slopes of 6 to 12 percent; on shoulders

ZamD5—Zanesville silt loam, soft bedrock substratum, 12 to 18 percent slopes, gullied

Setting

Landform: Hills underlain with interbedded sandstone, shale, and siltstone

Position on the landform: Backslopes

Other features: Between 25 and 40 percent of this map unit is gullied. The gullied areas consist of a network of mostly U-shaped channels averaging 2 to 4 feet in depth.

Soil Properties and Qualities

Parent material: Loess and a paleosol in loamy to clayey residuum

Depth class: Deep or very deep (48 to 80 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.5 feet (perched)

Available water capacity to a depth of 60 inches: About 5.6 inches

Composition

Zanesville and similar soils: 72 percent

Dissimilar components: 28 percent

- Zanesville, soft bedrock substratum, soils that have slopes of 6 to 18 percent and are slightly or moderately eroded; on shoulders and backslopes between gullies
- Zanesville, soft bedrock substratum, soils that have bedrock at 40 to 60 inches; on shoulders and backslopes and intermixed throughout the unit
- Tulip soils that have slopes of 12 to 18 percent; on backslopes and intermixed throughout the unit
- Wellston soils that have slopes of 12 to 25 percent; on backslopes and intermixed throughout the unit

ZapD3—Zanesville, soft bedrock substratum-Tulip silt loams, 12 to 18 percent slopes, severely eroded

Setting

Landform: Hills underlain with interbedded sandstone, shale, and siltstone

Position on the landform: Backslopes

Soil Properties and Qualities

Zanesville

Parent material: Loess and a paleosol in loamy to clayey residuum

Depth class: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Depth to water table: 1.5 to 2.5 feet (perched)

Available water capacity to a depth of 60 inches:
About 6.1 inches

Tulip

Parent material: Colluvium and a paleosol in clayey residuum

Depth class: Very deep (more than 60 inches)

Drainage class: Well drained

Depth to water table: 2.5 to 3.5 feet (perched)

Available water capacity to a depth of 60 inches:
About 8.5 inches

Composition

Zanesville and similar soils: 45 percent

Tulip and similar soils: 30 percent

Dissimilar components: 25 percent

- Zanesville, soft bedrock substratum, and Tulip soils that have slopes of 12 to 18 percent and are slightly or moderately eroded; on backslopes and intermixed throughout the unit
- Wellston soils that have slopes of 12 to 25 percent; on backslopes and intermixed throughout the unit
- Zanesville, soft bedrock substratum, soils that have slopes of 6 to 12 percent; on shoulders

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *slight*, *moderate*, and *severe*. The suitability ratings are expressed as *well suited*, *moderately suited*, *poorly suited*, and *unsuited* or as *good*, *fair*, *poor*, and *very poor*.

Agronomy

Doris D. Scully, resource conservationist, Natural Resources Conservation Service, helped to prepare this section.

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed, and the system of land capability classification used by the Natural Resources Conservation Service is explained and prime farmland is described.

Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

In 1997, about 92,586 acres in Owen County (about 37 percent of the total acreage) was used for grain crops, mainly corn, soybeans, and winter wheat, according to the Owen County Soil and Water Conservation District. About 24,960 acres was used for hay and pasture, which includes hayland in rotation with other crops. About 3,766 acres was idle cropland used for conservation purposes.

The potential for increased production of food crops is low. A small percentage of the acreage that is currently used as woodland or pasture could be converted to cropland. In addition to the reserve productive capacity represented by this land, food production can also be increased considerably by extending the latest crop production technology to all of the cropland in the county. This soil survey can greatly facilitate the application of such technology.

The paragraphs that follow describe the main management concerns affecting crops and pasture in

the survey area and the management practices that may be used successfully.

Water erosion is a major hazard on about 49 percent of the cropland and pasture in the county. It is a hazard in areas where the slope is more than about 2 percent.

Productivity is reduced as fertilizer, pesticides, herbicides, and organic matter are removed from the surface layer. The natural tilth of some soils, such as Grayford and Parke soils, is reduced as part of the more clayey subsoil is incorporated into the surface layer. Seedbed preparation becomes more difficult, and seed germination is hindered. Loss of the surface layer is especially damaging to soils that have a fragipan in the subsoil or have bedrock within a depth of 60 inches. The root zone in these soils consists mainly of the part of the profile above the limiting layer. As the surface layer is lost, the thickness of the root zone and the available water capacity are reduced. Ava, Cincinnati, Haubstadt, Otwell, Pekin, Solsberry, and Zanesville, soft bedrock substratum, soils have a fragipan. Caneyville and Wellston soils have bedrock within a depth of 60 inches.

Erosion results in the sedimentation and pollution of ditches, lakes, and streams. Controlling erosion minimizes sedimentation and pollution and improves water quality for fish and wildlife, for municipal use, and for recreational use.

In previous years, some areas of the county were subject to water erosion to the extent that a network of deep, U-shaped or V-shaped channels formed in the soils. In these channels, called gullies, the entire surface layer was lost and much of the subsoil was removed. The map units that have a large percentage of these gullies have "gullied" as part of their map unit name. Solsberry silt loam, 12 to 18 percent slopes, gullied, is an example. Almost all of the map units noted as gullied phases will need to be reshaped before they can be used for cropland, pasture, or hayland.

Planting cover crops may help to control erosion on the more sloping soils. Cover crops are especially important after soybeans, corn for silage, or tobacco are grown. Tillage methods that leave crop residue on 50 or more percent of the surface can protect most of the sloping soils from excessive erosion during winter and early spring.

A conservation tillage system helps to hold soil losses to acceptable levels on most of the sloping soils. If row crops are grown year after year on these soils, soil losses generally are high unless a conservation tillage system is applied.

No-till and strip-till cropping systems are effective in minimizing soil loss on the sloping soils used for corn or soybeans. These conservation tillage systems can

be adapted to many of the soils in the county that are susceptible to erosion. When no-till and strip-till systems are used in areas that have a thick vegetative cover or protective amounts of crop residue on the surface, soil moisture evaporates at a slower rate and the weed population is greatly reduced. Alvin, Bloomfield, Cincinnati, Crider, Grayford, Haubstadt, Otwell, Parke, Pike, Princeton, Ryker, Solsberry, Stinesville, and Zanesville, soft bedrock substratum, soils are examples of sloping soils that are suitable for no-till and strip-till systems.

Contour farming is effective in controlling erosion in several areas of the county. In areas where slopes are short and irregular, managing this practice may be difficult (fig. 13). Other types of conservation measures may be more suitable.

Water- and sediment-control basins are effective in reducing the rate of runoff in drainageways. They are most effective where subsurface tile can be installed as outlets and on soils that have slopes of about 8 percent or less. Cincinnati, Haubstadt, Pike, Solsberry, Stinesville, and Zanesville, soft bedrock substratum, soils are examples.

Grassed waterways are needed to protect the channels that drain a watershed. Subsurface drains are needed in areas where wetness or seepage is a problem in the waterways.

Grade-stabilization structures are needed in many areas of the county where water in one drainageway falls into a more sloping drainageway. These structures stabilize the drainageways and minimize gully erosion.

Information about the type and design of erosion-control practices that are best suited to each kind of soil in the county is available at the local office of the Natural Resources Conservation Service.

Wetness is the major management concern on about 28 percent of the cropland and pasture in the county. On most of the naturally wet, poorly drained or very poorly drained Birds, Bonnie, Hoosierville, Montgomery, Peoga, and Wilhite soils, production of the crops commonly grown in the county is generally not practical unless a drainage system is installed. In undrained areas of the somewhat poorly drained Ayrshire, Belknap, Dubois, Holton, Lieber, McGary, Newark, Patricksburg, Stendal, Taggart, Vigo, and Whitaker soils, wetness significantly damages crops in most years.

Various land use regulations of Federal, State, and local governments may impose special restrictions on the use of soils. An example is the protection of wetlands. Statements made in this section about wetness are intended to help the land user identify and reduce the effects of management concerns related to wetness. The landowner or user has the responsibility



Figure 13.—Growing soybeans by a contour farming method helps minimize erosion on this moderately sloping area of Stinesville soils.

of identifying and complying with existing laws and regulations.

The design of both surface and subsurface drainage systems varies with the kind of soil. A combination of surface and subsurface drains is needed on some soils that are intensively row cropped. Subsurface drains should be more closely spaced in slowly permeable or very slowly permeable soils than in more permeable soils. Filtering material is generally needed in subsurface drains in soils that have minimum grades and a high content of silt. Examples of these soils are Belknap, Birds, Bonnie, Hoosierville, Lieber, Newark, Stendal, Taggart, and Vigo soils. Finding adequate outlets for subsurface drainage systems is difficult in some areas of Birds, Bonnie, and Wilhite soils.

Further information about the design of drainage systems for each kind of soil is in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service.

Soil tilth is an important factor affecting the germination of seeds and the infiltration of water into

the soil. Soils that have good tilth are granular and porous.

Many of the soils used for row crops in the county have a surface layer of silt loam that has a moderate to low content of organic matter. Where there is little or no crop residue, a hard surface crust forms after periods of intensive rainfall. The hard crust reduces the infiltration rate, increases the runoff rate, and inhibits plant emergence. Regular additions of crop residue, cover crops, manure, and other organic material improve soil structure and help to minimize crusting.

Armiesburg, Montgomery, and Wilhite soils have a moderately fine textured surface layer. Tilth is a problem in areas of these soils. If tilled when too wet, the surface layer becomes very cloddy when dry and cannot be easily worked. As a result, preparing a good seedbed is very difficult. Fall tillage of these soils generally results in better tilth in the spring.

Many of the soils in the survey area have a silty or loamy surface layer that is easily compacted. Tilling or grazing when the soils are wet causes surface

compaction, which restricts penetration by tillage equipment and plant roots and limits plant growth.

Soil fertility is affected mainly by reaction and by the content of plant nutrients and organic matter. Most of the soils in the county on till plains, unglaciated hills, and lake terraces have low natural fertility. They typically are strongly acid or very strongly acid in nonlimed areas. Most of the soils on flood plains along the West Fork of the White River and Eel River range from moderately alkaline to moderately acid.

Most of the soils on flood plains along the tributaries of these rivers, including Lick, Fish, Racoon, and Rattlesnake Creeks and the flood plains along other creeks, range from neutral to very strongly acid.

On soils that have a pH level below about 6.4, applications of ground limestone are needed to raise the pH level sufficiently for the best utilization of plant nutrients by cultivated crops, such as corn and soybeans and thus for optimum yields. On soils that have a pH below about 6.4, ground limestone is needed for hay and pasture plants, such as alfalfa and red clover. The supply of available phosphorus and potassium is generally below the level needed for good plant growth in most of the soils in areas where fertilizer has been applied. On all soils, additions of lime and fertilizer should be based on the results of soil tests, the needs of the crop, and the desired level of yields. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to be applied.

The pasture plants commonly grown in the county are mixtures of tall fescue, orchardgrass, timothy, alfalfa, and red clover. Other pasture plants are bluegrass, ladino clover, redtop, alsike clover, lespedeza, and sweetclover. Most of the soils in the county are well suited to grasses, such as tall fescue, timothy, and orchardgrass, and to legumes, such as red clover, ladino clover, alfalfa, and lespedeza. Legumes grow poorly, however, in soils that are poorly drained or very poorly drained, such as Birds, Bonnie, Hoosierville, Montgomery, Peoga, and Wilhite soils. The growth of most deep-rooted legumes, such as alfalfa and sweetclover, is significantly restricted in soils that have a fragipan, such as Ava, Cincinnati, Dubois, Haubstadt, Otwell, Patricksburg, Pekin, Potawatomi, Shakamak, Solsberry, and Zanesville, soft bedrock substratum, soils.

Poorly drained and very poorly drained soils, such as Birds, Bonnie, Hoosierville, Montgomery, Peoga, and Wilhite soils, are well suited to water-tolerant grasses. Well drained soils, such as Alvin, Bloomfield, Crider, Grayford, Haggatt, Hickory, Martinsville, Olephant, Parke, Pike, Princeton, Ryker, Stinesville,

and Wellston soils, are well suited to deep-rooted legumes. The latest information on recommended grasses and legumes for each soil type can be obtained from local offices of the Cooperative Extension Service and the Natural Resources Conservation Service.

The field crops suited to the soils and climate in the survey area include those that are currently grown and some that are not commonly grown. Corn, soybeans, and wheat are the principal cultivated crops. Other cultivated crops are oats and rye. Alfalfa, red clover, timothy, bromegrass, and orchardgrass are common crops grown for hay and pasture. A very small acreage is used for tobacco.

The latest information about growing cultivated crops, hay and pasture plants, and specialty crops can be obtained from local offices of the Cooperative Extension Service or the Natural Resources Conservation Service.

Cropland Limitations and Hazards

The management concerns affecting the use of the soils in the survey area for crops are shown in table 5. The main concerns in managing cropland are controlling water erosion, soil wetness, and ponding; reducing surface crusting; improving poor tilth; and limiting the effects of excessive and restricted permeability and limited available water capacity.

Generally, a combination of several practices is needed to control both *water erosion* and *wind erosion*. Conservation tillage, stripcropping, contour farming, conservation cropping systems, crop residue management, diversions, and grassed waterways help to minimize soil loss.

Wetness is a limitation in some cropland areas, and *ponding* is a hazard in some areas. Drainage systems consist of subsurface tile drains, surface inlet tile, open drainage ditches, or a combination of these. Measures that maintain the drainage system are needed.

Practices that reduce surface *crusting* and improve poor tilth include incorporating green manure crops, manure, or crop residue into the soil and applying a system of conservation tillage. Surface cloddiness can be minimized by avoiding tillage when the soil is too wet.

Measures that conserve moisture are needed in areas where the soils have a *low available water capacity* or *moderate available water capacity*. These measures primarily involve reducing the evaporation and runoff rates and increasing the rate of water intake. Applying conservation tillage and conservation cropping systems, farming on the contour, stripcropping, establishing field windbreaks, and

leaving crop residue on the surface conserve moisture.

The natural reaction in the surface layer of most of the soils in the survey area is a *low pH* (soil reaction), except for some soils in flood plains. The pH of many soils needs to be raised to an optimal level for the crop being grown. Soils with a *high pH* may need treatment to lower the pH so that certain elements are adequately available for specific crop use.

Some of the limitations and hazards shown in the table cannot be easily overcome. These are *flooding*, *limiting rooting depth*, *restricted permeability*, and *subsidence*.

Soils with bedrock or a fragipan within a depth of 40 inches have *limited rooting depth* and limited available water for plant growth.

Winter grown small grain crops are likely to be damaged after flooding events. Water-tolerant species should be used in areas subject to frequent periods of flooding during the growing season.

Following is an explanation of the criteria used to determine the limitations or hazards.

Crusting.—The content of organic matter in the surface layer is 2 percent or less, the percent passing the number 200 sieve is more than 50 percent, and the content of clay is less than or equal to 32 percent.

Limited rooting depth.—Bedrock or a fragipan is within a depth of 40 inches.

Flooding.—The soil is occasionally or frequently flooded during the growing season.

Low available water capacity.—The weighted average of the available water capacity is equal to or more than 0.05 inch but is less than 0.10 inch of water per inch of soil within a depth of 60 inches.

Moderate available water capacity.—The weighted average of the available water capacity is equal to or more than 0.10 inch but is less than 0.15 inch of water per inch of soil within a depth of 60 inches.

Ponding.—The soil is subject to ponding during the growing season.

Poor tilth.—The soil typically has 32 percent or more clay in the surface layer.

Low pH.—The typical pH value is equal to or less than 6.0 in the surface layer.

High pH.—The typical pH value is equal to or more than 7.4 in the surface layer.

Restricted permeability.—Permeability is less than 0.2 inch per hour in one or more layers within a depth of 40 inches.

Water erosion.—The erodibility factor of the surface layer (Kf or Kw) multiplied by the slope is more than 0.8, and the average slope is 3 percent or more.

Wetness.—The soil has a water table within a depth of 1.5 feet during the growing season.

Wind erosion.—The wind erodibility group is 1 or 2 for soil in flood plains or 3 for soil in other areas.

Erodibility factors (e.g. K or Kf) and wind erodibility groups are described under the heading, "Physical Properties."

Pasture Limitations and Hazards

Growing legumes, cool-season grasses, and warm-season grasses that are suited to the soils and the climate of the area helps to maintain a productive stand of pasture.

The management concerns affecting the use of the soils in the survey area for pasture are shown in table 6. The main concerns in managing pasture are water erosion, equipment limitation, wetness and ponding, and low available water capacity. Also, most of the soils suitable for legumes have a high potential for frost action. The local office of the Natural Resources Conservation Service or the Cooperative Extension Service can provide information about legumes that can be damaged by frost heave. This hazard is not listed in table 6 because it applies to the majority of the soils.

Both *water erosion* and *wind erosion* reduce the productivity of pastureland. They also result in onsite and offsite sedimentation, cause water pollution by sedimentation, and increase the runoff of livestock manure and other added nutrients. Measures that are effective in controlling water erosion include establishing or renovating stands of legumes and grasses. Controlling erosion during seedbed preparation is a major concern. If the soil is tilled for the reseeding of pasture or hay crops, planting winter cover crops, establishing grassed waterways, farming on the contour, and applying a system of conservation tillage that leaves a protective cover crop residue on the surface can help to minimize erosion.

Overgrazing or grazing when the soil is wet reduces the extent of plant cover and results in surface compaction and poor tilth, and thus it increases the susceptibility to erosion. Proper stocking rates, rotation grazing, and timely deferment of grazing, especially during wet periods, help to keep the pasture in good condition. The proper location of livestock watering facilities helps to prevent surface compaction or the formation of ruts by making it unnecessary for cattle to travel long distances up and down the steep slopes.

In areas where slopes are 15 percent or more, the operation of farm equipment may be restricted and become hazardous. Also soils with rock fragments in the surface layer limit the type of equipment that can be used, or can damage equipment during reseeding and planting operations.

Soils with bedrock or a fragipan within a depth of 40 inches have limited rooting depth and limited available water for plant growth.

Available water capacity refers to the capacity of soils to hold water available for use by most plants. The quality and quantity of pasture plants may be reduced on soils that have low available water capacity. The amount of soil moisture may be inadequate for the maintenance of a healthy community of desired pasture species and thus the desired number of livestock. A poor-quality pasture increases the hazard of erosion and the runoff of pollutants. Planting drought-resistant species of grasses and legumes helps to establish a protective cover. Irrigation can be used to overcome a low available water capacity.

Wetness is a limitation in some pastured areas, and ponding is a hazard. Drainage systems consist of subsurface tile drains, surface inlet tiles, open drainage ditches, or a combination of these. Measures that maintain the drainage system are needed.

Both a *low pH* or a *high pH* (soil reaction) inhibit the uptake of certain nutrients by plants or accelerate the absorption of certain other elements to the level of toxic concentrations. Either of these conditions affects the health and vigor of the plants. For a low pH, applications of lime should be based on the results of soil tests. The goal is to achieve the optimum pH level for the uptake of the major nutrients by the specific grass, legume, or combination of grasses and legumes.

Some of the limitations and hazards shown in the table cannot be easily overcome. These are *limited rooting depth* and *flooding*.

Following is an explanation of the criteria used to determine the limitations or hazards.

Water erosion.—The erodibility factor of the surface layer (Kf or Kw) multiplied by the slope is more than 0.8, and the average slope is 3 percent or more.

Limited rooting depth.—Bedrock or a fragipan is within a depth of 40 inches.

Low pH.—The typical pH value is equal to or less than 6.0 in the surface layer.

High pH.—The typical pH value is equal to or higher than 7.4 in the surface layer.

Equipment limitation.—The soil has a slope of 15 percent or more.

Low available water capacity.—The weighted average of the available water capacity is less than 0.10 inch of water per inch of soil within a depth of 60 inches, or when the weighted average is less than 3 inches in areas where the root zone is less than 60 inches thick.

Flooding.—The soil is occasionally or frequently flooded during the growing season.

Wetness.—The soil is poorly drained or very poorly drained.

Ponding.—The soil is subject to ponding during the growing season.

Wind erosion.—The wind erodibility group is 1 or 2 for soils on flood plains or 3 for soils in other areas.

Flaggy surface.—The surface layer contains 15 percent or more flagstones.

Erodibility factors (e.g. K or Kf) and wind erodibility groups are described under the heading, "Physical Properties."

Estimated Yields per Acre

The average yields per acre that can be expected for the principal crops under a high level of management are shown in table 7. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The relative productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not

listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide additional information about the management and productivity of the soils for those crops.

Pasture and Hayland Interpretations

Under good management, proper grazing is essential for the production of high-quality forage, stand survival, and erosion control. Proper grazing helps plants to maintain sufficient and generally vigorous top growth during the growing season. Brush control is essential in many areas, and weed control generally is needed. Rotation grazing and renovation also are important management practices.

Pasture yield estimates are commonly given in animal unit months (AUM), or the amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about forage yields other than those shown in table 7.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forestland and for engineering purposes.

In the capability system, soils generally are grouped at three levels—capability class, subclass, and unit (USDA, 1961). Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by numerals 1 through 8. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, 2*e*. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use mainly to pasture, rangeland, woodland, wildlife habitat, or recreation.

The capability classification of the map units in this survey area is given in table 7.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and

fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

A recent trend in land use in some parts of the survey area has been the conversion of prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

About 107,802 acres, or nearly 44 percent of the total acreage, meets the criteria for prime farmland. Areas of this land are throughout the county.

The map units in the survey area that meet the criteria for prime farmland are listed in table 8. This list does not constitute a recommendation for a particular land use. On some soils included in the table, measures that overcome a hazard or limitation such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the

detailed soil maps. The soil qualities that affect use and management are described in individual sections of this publication.

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Windbreaks are often planted on land that did not originally support trees. Knowledge of how trees perform on such land can be gained only by observing and recording the performance of trees that have been planted and have survived. Many popular windbreak species are not indigenous to the areas in which they are planted.

Each tree or shrub species has certain climatic and physiographic limits. Within these parameters, a tree or shrub may grow well or grow poorly, depending on the characteristics of the soil. Each tree or shrub has definable potential heights in a given physiographic area and under a given climate. Accurate definitions of potential heights are necessary when a windbreak is planned and designed.

Table 9 shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in this table are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning

windbreaks and screens and planting and caring for trees and shrubs can be obtained from local offices of the Natural Resources Conservation Service or the Cooperative Extension Service or from a nursery.

Forestland

David F. Berna, forester, Natural Resources Conservation Service, helped to prepare this section.

Virgin forest once covered most of the land in Owen County, but the trees have been removed from most of the land suitable for cultivation. In much of the forestland, the soils are too steep or too wet for farming. Under proper management, the soils in these areas produce trees of high quality.

About 128,000 acres of the county, or about 52 percent of the total acreage, is forestland. Part of this acreage is in Owen-Putnam State Forest and in McCormick's Creek State Park. The remaining acreage is privately owned.

The most common trees in the uplands are mixed hardwoods, mainly yellow-poplar, sugar maple, white oak, sycamore, red maple, silver maple, and pin oak.

Much of the existing commercial forestland could be improved by thinning out mature trees and undesirable species. Protection from grazing and fire and control of disease and insects can also improve the stands. The Natural Resources Conservation Service, the State Division of Forestry, consulting foresters, and the Cooperative Extension Service can ascertain specific woodland management needs. Assistance in establishing, improving, or managing forestland is available from foresters or natural resources specialists.

Forestland Management and Productivity

Information about the productivity and management of the forested map units in this survey area is given in table 10. This table can be used by forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed.

Woodland Ordination System

Table 10 lists the *ordination symbol* (woodland suitability) for each soil. The ordination system is a nationwide uniform system of labeling soils or groups of soils that are similar in use and management. The primary factors evaluated in the woodland ordination system are productivity of the forest overstory tree species and the principal soil properties resulting in hazards and limitations that affect forest management.

There are three parts of the ordination system: class, subclass, and group. The class and subclass are referred to as the ordination symbol.

Ordination Class Symbol

The first element of the ordination symbol is a number that denotes potential productivity in terms of cubic meters of wood per hectare per year for the indicator tree species. The larger the number, the greater the potential productivity. Potential productivity is based on site index and the corresponding culmination of mean annual increment. For example, the number 1 indicates a potential production of 1 cubic meter of wood per hectare per year (14.3 cubic feet per acre per year) and 10 indicates a potential production of 10 cubic meters of wood per hectare per year (143 cubic feet per acre per year).

Indicator species is a species that is common in the area and is generally, but not necessarily, the most productive on the soil. It is the species that determines the ordination class. It is the first species listed for a particular map unit in table 10. This table shows the productivity for all species where data have been collected.

Site index is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years. This index applies to fully stocked, even-aged, unmanaged stands. The site indexes shown in table 10 are averages based on measurements made at sites that are representative of the soil series. When the site index and forestland productivity of different soils are compared, the values for the same tree species should be compared. The higher the site index number, the more productive the soil for that species. Site index values are used in conjunction with yield tables to determine average annual yields. Indirectly, they are used to determine the productivity class in the ordination class symbol.

Ordination Subclass Symbol

The second element of the ordination symbol, or subclass, is a capital letter that indicates certain soil or physiographic characteristics that contribute to important hazards or limitations to be considered in management. The subclasses are defined as follows:

Subclass X indicates that forestland use and management are limited by stones or rocks.

Subclass W indicates that forestland use and management are significantly limited by excess water, either seasonally or throughout the year. Restricted

drainage, a high water table, or flooding can adversely affect either stand development or management.

Subclass T indicates that the root zone has toxic substances. Excessive alkalinity, acidity, sodium salts, or other toxic substances impede the development of desirable species.

Subclass D indicates that forestland use and management are limited by a restricted rooting depth. The rooting depth is restricted by hard bedrock, a hardpan, or other restrictive layers in the soil.

Subclass C indicates that forestland use and management are limited by the kind or amount of clay in the upper part of the soil.

Subclass S indicates that the soil is sandy, has a low available water capacity, and normally has a low content of available plant nutrients. The use of equipment is limited during dry periods.

Subclass F indicates that forestland use and management are limited by a high content of rock fragments that are larger than 2 millimeters and smaller than 10 inches. This subclass includes flaggy soils.

Subclass R indicates that forestland use and management are limited by excessive slope.

Subclass A indicates that no significant limitations affect forestland use and management.

Management Concerns

In table 10, the soils are rated for the erosion hazard, the equipment limitation, seedling mortality, the windthrow hazard, and plant competition.

The *erosion hazard* is *slight* if the expected soil loss is small, *moderate* if some measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive soil loss.

The *equipment limitation* is *slight* if the use of equipment is not limited to a particular kind of equipment or time of year; *moderate* if there is a short seasonal limitation or a need for some modification in the management of equipment; and *severe* if there is a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings are for seedlings that are from a good planting stock and that are properly planted during a period of average rainfall. A rating of *slight* indicates that the expected mortality of the planted seedlings is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Windthrow hazard is *slight* if trees in wooded areas are not expected to be blown down by commonly occurring winds; *moderate* if some trees are blown down during periods of excessive soil wetness and strong winds; and *severe* if many trees are blown

down during periods of excessive soil wetness and moderate or strong winds.

Plant competition is *slight* if there is little or no competition from other plants; *moderate* if plant competition is expected to hinder the development of a fully stocked stand of desirable trees; and *severe* if plant competition is expected to prevent the establishment of a desirable stand unless the site is intensively prepared, weeded, or otherwise managed for the control of undesirable plants.

Potential Productivity

In table 10, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

The column *suggested trees to plant* lists trees that are suitable for commercial wood production and are suited to the soils.

Recreation

The soils of the survey area are rated in table 11 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of

flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In the table, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and can be easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these.

The information in table 11 can be supplemented by other information in this survey, for example, interpretations for dwellings without basements and for local roads and streets in table 13 and interpretations for septic tank absorption fields in table 14.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil

properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for tees, roughs, and greens is not considered in the ratings.

The interpretative ratings in this table help engineers, planners, and others to understand how soil properties influence recreational uses. Ratings for proposed uses are given in terms of limitations. Only the most restrictive features are listed. Other features may limit a specific recreational use.

Wildlife Habitat

James D. McCall, wildlife biologist, Natural Resources Conservation Service, helped to prepare this section.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

Elements of Wildlife Habitat

In table 12, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, wheat, rye, oats, sorghum, and sunflowers.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, timothy, orchardgrass, clover, bluegrass, alfalfa, trefoil, reed canarygrass, and crownvetch.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, grama, ragweed, pokeweed, sheep sorrel, dock, crabgrass, and dandelion.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, beech, wild cherry, sweetgum, willow, black walnut, apple, hawthorn, dogwood, hickory, hazelnut, blackberry, mayapple, elderberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, hemlock, fir, yew, cedar, larch, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, pondweed, spikerush, wild millet, rushes, sedges, bulrushes, wildrice, arrowhead, waterplantain, pickerelweed, and cattail.

Shallow water areas have an average depth of less than 5 feet. They are useful as habitat for some wildlife species. Some are naturally wet areas. Others are created by dams, levees, or water-control structures. Soil properties and features affecting shallow water

areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

Kinds of Wildlife Habitat

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, and shrubs. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, dove, meadowlark, field sparrow, cottontail, woodchuck, and red fox.

Habitat for woodland wildlife consists of areas of deciduous and/or coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, owls, tree squirrels, porcupine, raccoon, and white-tailed deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas that support water-tolerant plants. Wildlife attracted to this habitat include ducks, geese, herons, bitterns, rails, kingfishers, muskrat, otter, mink, and beaver.

Areas where major land uses or cover types adjoin are called "edge habitat." A good example is the border between dense woodland and a field of no-till corn. Although not rated in the table, edge habitat is of primary importance to animals from the smallest songbirds to white-tailed deer. Most of the animals that inhabit areas of openland or woodland also frequent edge habitat, and desirable edge areas are consistently used by 10 times as many animals as are the centers of large areas of woodland or cropland.

Hydric Soils

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that

have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile (Federal Register, 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 1998) and in the "Soil Survey Manual" (Soil Survey Division, 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators that can be used to make onsite determinations of hydric soils in Owen County are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 1998).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if one (or more) of the approved indicators is present.

The following map units meet the definition of hydric soils and in addition have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 1998).

AbgAU—Adrian muck, undrained, 0 to 1 percent slopes
 BgeAH—Birds silt loam, 0 to 1 percent slopes, frequently flooded, brief duration
 BodAV—Bonnie silt loam, 0 to 1 percent slopes, frequently flooded, very brief duration
 HnoA—Hoosierville silt loam, 0 to 1 percent slopes
 MsvA—Montgomery silty clay loam, 0 to 1 percent slopes
 PhaA—Peoga silt loam, 0 to 1 percent slopes
 PhaAP—Peoga silt loam, ponded, 0 to 1 percent slopes
 WolAI—Wilhite silty clay, 0 to 1 percent slopes, frequently flooded, long duration
 WomAH—Wilhite silty clay loam, 0 to 1 percent slopes, frequently flooded, brief duration
 WpyBJ—Wirt-Pekin silt loams, 0 to 6 percent slopes, frequently flooded, very long duration

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions of the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the tables described under the heading “Soil Properties.”

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and

regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 13 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features generally are favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is

needed to overcome or minimize the limitations; and severe if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, or other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding (fig. 14), large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity (fig. 15 and fig. 16).

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established

and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 14 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. It also shows the suitability of the soils for use as a daily cover for landfill.

Soil properties are important in selecting sites for sanitary facilities and in identifying limiting soil properties and site features to be considered in planning, design, and installation. Soil limitation ratings of *slight*, *moderate*, or *severe* are given for septic tank absorption fields, sewage lagoons, and trench and area sanitary landfills. Soil suitability ratings of *good*, *fair*, and *poor* are given for daily cover for landfill.

A rating of *slight* or *good* indicates that the soils have no limitations or that the limitations can be easily overcome. Good performance and low maintenance can be expected. A rating of *moderate* or *fair* indicates that the limitations should be recognized but generally can be overcome by good management or special design. A rating of *severe* or *poor* indicates that overcoming the limitations is difficult or impractical. Increased maintenance may be required.

Septic tank absorption fields are areas in which subsurface systems of tile or perforated pipe distribute effluent from a septic tank into the natural soil. The centerline of the tile is assumed to be at a depth of 24 inches. Only the part of the soil between a depth of 24 and 60 inches is considered in making the ratings. The soil properties and site features considered are those that affect the absorption of the effluent, those that affect the construction and maintenance of the system, and those that may affect public health.

The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock, and flooding affect absorption of the effluent. Large stones and bedrock interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or



Figure 14.—Floodwaters cover this road that was built on Steff and Stendal soils. Building roads is a design concern for these soils and other flood plain soils that are subject to flooding (Scott County, IN).

fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Individuals need to contact the Owen County Health Department for procedures and local septic codes to determine site feasibility for septic tank absorption fields.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted, relatively impervious soil material. Aerobic lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Relatively impervious soil material for the lagoon floor and sides is desirable to minimize seepage and contamination of local ground water.

Table 14 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and generally 1 or 2 feet of soil material below the surface layer are

excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope and bedrock can cause construction problems, and large stones can hinder compaction of the lagoon floor.

A *trench sanitary landfill* is an area where solid waste is disposed of by placing refuse in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil that is excavated from the trench. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. Soil properties that influence

the risk of pollution, the ease of excavation, trafficability, and revegetation are the major considerations in rating the soils.

An *area sanitary landfill* is an area where solid waste is disposed of by placing refuse in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil that is imported from a source away from the site. A final cover of soil at least 2 feet thick is placed over the completed landfill. Soil properties that influence trafficability, revegetation, and the risk of pollution are the main considerations in rating the soils for area sanitary landfills.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. The ratings in the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of

the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The suitability of a soil for use as cover is based on properties that affect workability and the ease of digging, moving, and spreading the material over the refuse daily during both wet and dry periods.

Soil texture, wetness, rock fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best daily cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock or a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants.



Figure 15.—Floodwaters cover this road that was built on Wirt soils. Building roads is a design concern for these soils and other flood plain soils that are subject to flooding.



Figure 16.—Damage from frost heave has occurred to this road constructed in an area of soils which has a high potential for frost action (Scott County, IN).

The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Waste Management

Soil properties are important when organic waste is applied as fertilizer and wastewater is applied in irrigated areas. They also are important when the soil is used as a medium for the treatment and disposal of the organic waste and wastewater. Unfavorable soil properties can result in environmental damage.

The use of organic waste and wastewater as production resources results in the conservation of energy and resources and minimizes the problems associated with waste disposal. If disposal is the goal, applying a maximum amount of the organic waste or the wastewater to a minimal area holds costs to a minimum and environmental damage is the main hazard. If reuse is the goal, a minimum amount should

be applied to a maximum area and environmental damage is unlikely.

Interpretations developed for waste management may include ratings for manure- and food-processing waste, municipal sewage sludge, use of wastewater for irrigation, and treatment of wastewater by slow rate, overland flow, and rapid infiltration processes.

Specific information regarding waste management is available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Construction Materials

Table 15 gives information about the soils as potential sources of roadfill, sand, gravel, and topsoil. The soils are rated *good*, *fair*, or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel.

Roadfill is soil material that is excavated in one place and used in road embankments in another

place. In the table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread. Many soils have layers of contrasting suitability within their profile. Table 15 provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel, or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have one or more of the following characteristics—a plasticity index of more than 10, a high shrink-swell potential, many stones, slopes of more than 25 percent, or a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 15, only the probability of finding material in suitable quantity in or below the soil is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of

grain sizes is given in the table on engineering index properties.

A soil rated as a *probable* source has a layer of clean sand or gravel or a layer of sand or gravel that has up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an *improbable* source. Fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils; loamy soils that have a relatively high content of clay; soils that have only 20 to 40 inches of suitable material; soils that have an appreciable amount of gravel, stones, or soluble salts; or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils generally is preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 16 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and

aquifer-fed excavated ponds. The limitations are considered *slight* if properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by

depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 17 gives the engineering classifications and the range of index properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter (fig. 17). "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2001) and the system adopted by the American Association

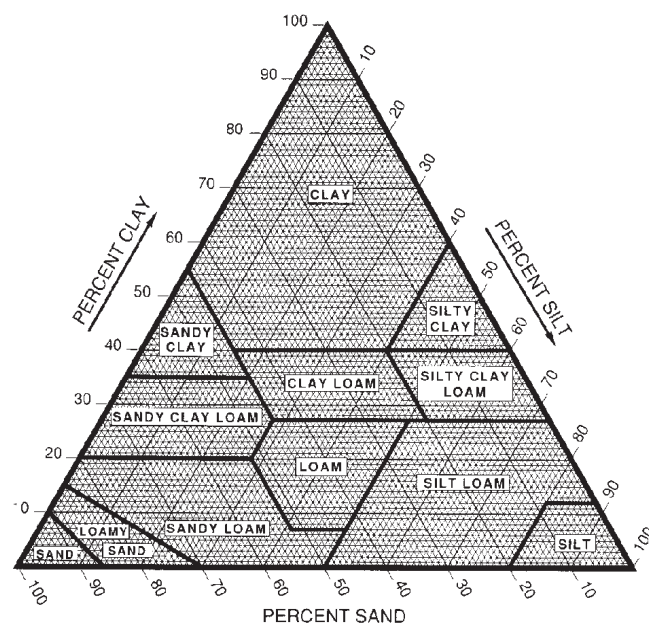


Figure 17.—Percentages of clay, silt, and sand in the basic USDA soil textural classes.

of State Highway and Transportation Officials (AASHTO, 2000).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other

extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of particle-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is generally omitted in the table.

Physical Properties

Table 18 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In table 18, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $\frac{1}{3}$ - or $\frac{1}{10}$ -bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability (K_{sat}) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in

soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on the basis of measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; *high*, more than 6 percent; and *very high*, greater than 9 percent.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 18, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of several factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor K_f indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

- 4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.

8. Soils that are not subject to wind erosion because of rock fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Properties

Table 19 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in

selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Water Features

Table 20 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered

flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

The table gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on observations of the water table at selected sites and on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in the table are depth to the seasonal high water table, the kind of water table, and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot.

The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. Three dashes "---" indicate that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. *Ponding duration* classes are the same as those for flooding. *Maximum ponding depth* refers to the depth of the water above the surface of the soil.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

Table 21 give estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Depth to bedrock is given if bedrock is within a depth of 80 inches. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

A *low* potential for frost action indicates that the soil is rarely susceptible to the formation of ice lenses; a *moderate* potential indicates that the soil is susceptible to formation of ice lenses, resulting in frost heave and the subsequent loss of soil strength; and a *high* potential indicates that the soil is highly susceptible to formation of ice lenses, resulting in frost heave and the subsequent loss of soil strength.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1998 and 1999). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 22 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aqualf (*Aqu*, meaning water, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Fragiaqualf (*Fragi*, meaning presence of a fragipan, plus *aqualf*, the suborder of the Alfisols that has a aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. An example is Aerice Fragiaqualfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical

properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-silty, mixed, active, mesic Aerice Fragiaqualfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, arranged in alphabetical order, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each soil series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999), and in "Keys to Soil Taxonomy" (Soil Survey Staff, 1998). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Adrian Series

Taxonomic classification: Sandy or sandy-skeletal, mixed, euic, mesic Terric Haplosaprists

Typical Pedon for the MLRA

Adrian muck, undrained, in a nearly level area in a wetland; 1,300 feet east and 2,470 feet north of the southwest corner of sec. 6, T. 11 N., R. 4 W.; Owen County, Indiana.

Oa1—0 to 14 inches; black (10YR 2/1) broken face, black (5YR 2.5/1) rubbed muck; about 20 percent fibers, about 5 percent rubbed; moderate medium granular structure; very friable; many very fine and fine roots; many very fine and fine interstitial pores; neutral; diffuse smooth boundary.

Oa2—14 to 24 inches; black (10YR 2/1) broken face, black (5YR 2.5/1) rubbed muck; about 30 percent fibers, about 10 percent rubbed; weak thick platy structure; very friable; common very fine and fine roots; many very fine and fine interstitial pores; neutral; clear wavy boundary.

Oa3—24 to 28 inches; black (10YR 2/1) broken face, black (5YR 2.5/1) rubbed muck; about 20 percent fibers, about 10 percent rubbed; weak thick platy structure; very friable; many very fine and fine interstitial pores; neutral; clear wavy boundary.

Oa4—28 to 32 inches; dark reddish brown (5YR 2.5/2) broken face, black (5YR 2.5/1) rubbed muck; about 30 percent fibers, about 10 percent rubbed; weak thick platy structure; very friable; many very fine and fine interstitial pores; neutral; clear wavy boundary.

Oa5—32 to 35 inches; dark reddish brown (5YR 2.5/2) broken face, black (5YR 2.5/1) rubbed muck; about 20 percent fibers, about 10 percent rubbed; weak thick platy structure; very friable; many very fine and fine interstitial and tubular pores; slightly acid; clear wavy boundary.

Oa6—35 to 40 inches; dark reddish brown (5YR 2.5/2) broken face, black (5YR 5/1) rubbed muck; about 30 percent fibers, about 20 percent rubbed; weak thick platy structure; very friable; many very fine and fine interstitial pores; slightly acid; abrupt wavy boundary.

2C1—40 to 50 inches; light gray (10YR 7/2) sand; single grain; loose; 2 percent pebbles; neutral; gradual wavy boundary.

2C2—50 to 60 inches; light gray (10YR 7/2) sand; single grain; loose; 7 percent pebbles; neutral.

MLRA Range in Characteristics

Thickness of the organic material: 24 to 45 inches

Oa horizon:

Color (surface tier)—hue of 10YR to 5YR or N, value of 2 or 2.5, and chroma of 0 to 2

Color (subsurface tier)—hue of 10YR to 5YR or N, value of 2 or 3, and chroma of 0 to 3

pH range—5.6 to 7.3

2C horizon:

Color—hue of 10YR, value of 6 or 7, and chroma of 1 or 2

Texture—sand or loamy sand or the gravelly analogs of these textures

Content of rock fragments—0 to 25 percent pebbles

pH range—5.6 to 7.3

Adyeville Series

Taxonomic classification: Coarse-loamy, mixed, semiactive, mesic Typic Hapludults

Typical Pedon for the Series

Adyeville very fine sandy loam, on a slope of 40 percent, in an area of woodland; 450 feet south and 300 feet west of the northeast corner of sec. 3, T. 4 S., R. 3 W.; Perry County, Indiana.

A—0 to 3 inches; very dark grayish brown (10YR 3/2) very fine sandy loam, light brownish gray (10YR 6/2) dry; weak very fine granular structure; friable; many fine and medium roots throughout; 2 percent strongly cemented sandstone channers; extremely acid; abrupt smooth boundary.

E—3 to 9 inches; light yellowish brown (10YR 6/4) very fine sandy loam, very pale brown (10YR 7/2) dry; weak fine subangular blocky structure; friable; many fine and medium roots throughout; common faint discontinuous yellowish brown (10YR 5/4) clay films on faces of peds and in pores; 7 percent strongly cemented channers; extremely acid; clear wavy boundary.

Bt1—9 to 17 inches; yellowish brown (10YR 5/6) loam; moderate medium subangular blocky structure; friable; common fine and medium roots throughout; common faint discontinuous yellowish brown (10YR 5/4) clay films on faces of peds and in pores; 7 percent strongly cemented channers; extremely acid; clear wavy boundary.

Bt2—17 to 24 inches; strong brown (7.5YR 5/6) loam; moderate medium subangular blocky structure; friable; common fine roots between peds; many distinct discontinuous yellowish brown (10YR 5/4) and common faint discontinuous yellowish red (5YR 5/6) clay films on faces of peds and in pores; 20 percent strongly cemented channers; extremely acid; clear wavy boundary.

Cr—24 to 60 inches; weakly cemented and moderately cemented sandstone interbedded with siltstone, shale, and very strongly cemented sandstone.

Series Range in Characteristics

Depth to the base of the argillic horizon: 20 to 40 inches

Depth to paralithic contact: 20 to 40 inches

Other features: Rock fragments are dominantly strongly or more cemented sandstone and range in content from 0 to 15 percent in the A and E horizons and 5 to 35 percent in the Bt horizon.

A or Ap horizon:

Color—hue of 10YR, value of 2 or 3, and chroma of 1 to 3 (A); hue of 10YR, value of 3 to 5, and chroma of 2 to 4 (Ap)

Texture—silt loam, loam, or very fine sandy loam
pH range—3.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

E or BE horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 4

Texture—loam or very fine sandy loam
pH range—3.5 to 5.5

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6

Texture—loam, fine sandy loam, very fine sandy loam, silt loam, or channery silt loam or the channery analogs of these textures
pH range—3.5 to 5.5

Cr horizon:

Kind of bedrock—dominantly weakly cemented and moderately cemented sandstone interbedded with siltstone, shale, and strongly or more cemented sandstone layers

Alvin Series

Taxonomic classification: Coarse-loamy, mixed, superactive, mesic Typic Hapludalfs

Typical Pedon for the MLRA

Alvin fine sandy loam, on a slope of 10 percent, in an area of Alvin-Princeton fine sandy loams, 6 to 12 percent slopes, in a cultivated field; 2,000 feet south and 2,300 feet west of the northeast corner of sec. 31, T. 9 N., R. 4 W.; Owen County, Indiana.

Ap—0 to 9 inches; brown (10YR 4/3) fine sandy loam, pale brown (10YR 6/3) dry; weak fine granular structure; very friable; common very fine and fine roots; many very fine and fine interstitial and tubular pores; moderately acid; abrupt smooth boundary.

E—9 to 12 inches; pale brown (10YR 6/3) fine sandy loam, very pale brown (10YR 7/3) dry; weak very fine subangular blocky structure; very friable; common very fine and fine roots; many very fine

and fine interstitial and tubular pores; strongly acid; clear wavy boundary.

Bt1—12 to 21 inches; dark yellowish brown (10YR 4/6) fine sandy loam; weak fine subangular blocky structure; very friable; common very fine and fine roots; many very fine and fine interstitial and tubular pores; few patchy distinct brown (7.5YR 4/4) clay films on faces of peds; slightly acid; clear wavy boundary.

Bt2—21 to 28 inches; brown (7.5YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; few very fine and fine roots; common very fine and fine tubular pores; many faint continuous dark brown (7.5YR 3/4) clay films on faces of peds; moderately acid; gradual wavy boundary.

Bt3—28 to 39 inches; dark yellowish brown (10YR 4/4) loamy fine sand; weak medium and coarse subangular blocky structure; very friable; common distinct continuous brown (7.5YR 4/4) clay bridging sand grains; slightly acid; gradual wavy boundary.

Bt4—39 to 50 inches; dark yellowish brown (10YR 4/6) loamy fine sand; weak coarse subangular blocky structure; very friable; common distinct discontinuous brown (7.5YR 4/4) clay bridging sand grains, and pale brown (10YR 6/3) skeletal sand on faces of peds; slightly acid; clear wavy boundary.

E and Bt—50 to 63 inches; pale brown (10YR 6/3) fine sand (E); single grain; loose; 1/8- to 1/4-inch bands of brown (7.5YR 4/4) loamy fine sand (Bt) with a total thickness of 1 inch; common distinct continuous brown (7.5YR 4/4) clay bridging sand grains; slightly acid; gradual wavy boundary.

C—63 to 80 inches; 80 percent light yellowish brown (10YR 6/4) sand with thin strata of loamy fine sand and silt; sand is single grain; loose; loamy fine sand and silt are massive; very friable; slightly acid.

MLRA Range in Characteristics

Depth to the base of the argillic horizon: 40 to more than 80 inches

A or Ap horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 3 or 4; chroma ranges from 1 to 4 (A)

Texture—fine sandy loam, sandy loam, or loamy sand
pH range—5.1 to 7.3

E or BE horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 or 4

Texture—fine sandy loam, loamy fine sand, or loamy sand
pH range—5.1 to 7.3

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 to 6
Texture—fine sandy loam, sandy loam, loam, or thin layers of sandy clay loam; loamy fine sand or loamy sand in the lower part of some pedons
pH range—5.1 to 7.3

E part of the E and Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 6
Texture—sandy loam, loamy sand, or sand or the fine analogs of these textures
pH range—5.1 to 7.3

Bt part of the E and Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 to 6
Texture—sandy loam, loamy sand, or sand or the fine analogs of these textures
pH range—5.1 to 7.3

C horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 to 6
Texture—fine sand, sand, loamy fine sand, or loamy sand; thin strata of silt, sandy loam, or fine sandy loam in some pedons
pH range—6.1 to 8.4

Armiesburg Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Fluventic Hapludolls

Typical Pedon for the Series

Armiesburg silty clay loam, in a nearly level area in a cultivated field; 2,800 feet south and 50 feet west of the northeast corner of sec. 28, T. 5 N., R. 7 W.; Knox County, Indiana.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; slightly alkaline; abrupt smooth boundary.

A—8 to 16 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; moderate medium angular blocky structure; firm; slightly alkaline; clear wavy boundary.

Bw1—16 to 24 inches; brown (10YR 4/3) silty clay loam; weak coarse prismatic structure parting to moderate medium subangular blocky; firm;

common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; neutral; clear wavy boundary.

Bw2—24 to 38 inches; yellowish brown (10YR 5/4) silty clay loam; weak very coarse prismatic structure parting to weak coarse subangular blocky; firm; neutral; gradual wavy boundary.

C—38 to 60 inches; brown (10YR 5/3) silty clay loam; massive; firm; neutral.

Series Range in Characteristics

Depth to the base of the cambic horizon: 35 to 60 inches

Thickness of the mollic epipedon: 10 to 20 inches

A or Ap horizon:

Color—hue of 10YR, value of 2 or 3, and chroma of 1 to 3

Texture—silt loam or silty clay loam

pH range—6.1 to 7.8

Bw or BC horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4

Texture—silty clay loam or silt loam in upper part; clay loam in lower part

pH range—6.1 to 7.3

C horizon:

Color—hue of 10YR, value of 3 to 5, and chroma of 3 or 4

Texture—silty clay loam, silt loam, or loam

pH range—6.1 to 7.8

Arney Series

Taxonomic classification: Fine-silty, mixed, active, mesic Aquultic Hapludalfs

Typical Pedon for the Series

Arney silt loam, on a convex slope of 4 percent, in a cultivated field; 1,350 feet east and 250 feet north of the southwest corner of sec. 2, T. 12 N., R. 7 W.; Clay County, Indiana.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak medium granular structure; friable; common very fine roots; many very fine interstitial and tubular pores; very strongly acid; abrupt smooth boundary.

Bt1—9 to 15 inches; yellowish brown (10YR 5/4) silty clay loam; weak fine subangular blocky structure; friable; few very fine roots; common very fine tubular pores; few patchy distinct brown (7.5YR 4/4) clay films on faces of peds and lining pores; common pale brown (10YR 6/3) silt coatings on

surface of peds; strongly acid; clear wavy boundary.

Bt2—15 to 23 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; few very fine roots; common very fine tubular pores; common distinct discontinuous brown (7.5YR 4/4) clay films on faces of peds and lining pores; few fine faint pale brown (10YR 6/3) iron depletions in the matrix; very strongly acid; clear wavy boundary.

Bt3—23 to 27 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; firm; few very fine roots; common very fine tubular pores; common distinct continuous brown (7.5YR 4/4) clay films on faces of peds and lining pores; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine distinct olive brown (2.5Y 4/4) masses that have accumulated iron and are in the matrix; very strongly acid; clear wavy boundary.

Bt4—27 to 36 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; many very fine vesicular and tubular pores; common distinct discontinuous brown (7.5YR 4/4) clay films on faces of peds and lining pores; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common distinct continuous light gray (10YR 7/2) clay depletions on vertical faces of peds; very strongly acid; clear wavy boundary.

Btx1—36 to 45 inches; yellowish brown (10YR 5/4) silt loam; moderate medium prismatic structure; firm; few very fine roots between peds; few very fine vesicular pores; common distinct discontinuous grayish brown (10YR 5/2) clay films on faces of peds and lining pores; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common distinct discontinuous light gray (10YR 7/2) clay depletions on faces of peds; few fine reddish gray (5YR 5/2) slightly hard iron-manganese concretions in the matrix; 50 percent brittle; very strongly acid; clear wavy boundary.

Btx2—45 to 60 inches; yellowish brown (10YR 5/4) silt loam; moderate coarse prismatic structure; firm; few very fine roots between peds; common fine and very fine vesicular pores; common distinct discontinuous grayish brown (10YR 5/2) clay films on faces of peds and lining pores; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common prominent

discontinuous light gray (10YR 7/2) clay depletions on faces of peds; 50 percent brittle; very strongly acid; clear wavy boundary.

2Bt1—60 to 73 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium and thick platy structure; firm; common distinct discontinuous brown (7.5YR 4/4) clay films on faces of peds; few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; few fine black (N 2/0) slightly hard iron-manganese concretions; very strongly acid; gradual wavy boundary.

2Bt2—73 to 80 inches; dark yellowish brown (10YR 4/4) loam; moderate medium subangular blocky structure; firm; common distinct discontinuous brown (7.5YR 4/4) clay films on faces of peds; few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; common patchy distinct light brownish gray (10YR 6/2) clay depletions on faces of peds; few fine black (N 2/0) slightly hard iron-manganese concretions; 2 percent fine pebbles; very strongly acid.

Series Range in Characteristics:

Depth to the base of the argillic horizon: More than 80 inches

Thickness of the loess: 50 to 70 inches

Depth to the Btx horizon: 30 to 40 inches; 30 to 60 percent brittle

A or Ap horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 4

pH range—4.5 to 7.3; depends upon liming history

Bt or BE horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 3 to 6

Texture—silt loam or silty clay loam

pH range—4.5 to 5.5

Btx horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8

Texture—silt loam

pH range—4.5 to 5.5

2Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8

Texture—silt loam, loam, or clay loam

Content of rock fragments—1 to 5 percent pebbles
pH range—4.5 to 6.0

Ava Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Oxyaquic Fragiudalfs

Typical Pedon for the MLRA

Ava silt loam, on a slope of 4 percent, in a cultivated field; 250 feet west and 1,650 feet north of the southeast corner of sec. 6, T. 10 N., R. 5 W.; Owen County, Indiana.

- Ap—0 to 8 inches; 95 percent brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry, and 5 percent yellowish brown (10YR 5/4) silt loam; weak fine granular structure; friable; many very fine roots; many very fine interstitial and tubular pores; neutral; abrupt smooth boundary.
- BE—8 to 11 inches; yellowish brown (10YR 5/4) silt loam; weak medium platy structure parting to weak very fine subangular blocky; friable; few very fine roots; common very fine interstitial and tubular pores; 5 percent krotovinas filled with brown (10YR 4/3) silt loam; very strongly acid; clear wavy boundary.
- Bt1—11 to 21 inches; yellowish brown (10YR 5/6) silt loam; common fine distinct pale brown (10YR 6/3) mottles; weak fine subangular blocky structure; friable; few very fine roots; many very fine tubular pores; common distinct discontinuous dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine rounded weakly cemented iron-manganese concretions; very strongly acid; gradual wavy boundary.
- Bt2—21 to 27 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; few very fine roots; many very fine tubular pores; common distinct continuous grayish brown (10YR 5/2) clay films on faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; few fine rounded weakly cemented iron-manganese concretions; very strongly acid; abrupt irregular boundary.
- Btx/E—27 to 35 inches; 90 percent yellowish brown (10YR 5/8) silt loam (Btx) and 10 percent light gray (10YR 7/2) silt loam (E); E material is between peds; moderate coarse prismatic structure; very firm; few very fine roots; few very fine vesicular and tubular pores; distinct continuous grayish brown (10YR 5/2) clay films and common light gray (10YR 7/2) clay depletions on faces of peds; common fine distinct grayish brown (10YR 5/2) iron depletions and faint strong brown (7.5YR 5/8) masses that have accumulated iron and are in the matrix; few fine rounded weakly

- cemented iron-manganese concretions; brittle (Btx); very strongly acid; gradual wavy boundary.
- Btx1—35 to 43 inches; yellowish brown (10YR 5/8) silt loam; strong coarse and very coarse prismatic structure; very firm; few very fine roots; few very fine vesicular and tubular pores; many distinct continuous grayish brown (10YR 5/2) clay films and prominent light gray (10YR 7/2) clay depletions on faces of peds; common fine rounded weakly cemented iron-manganese concretions; 1 percent pebbles; brittle; very strongly acid; gradual wavy boundary.
- 2Btx2—43 to 59 inches; yellowish brown (10YR 5/6) silt loam; strong very coarse prismatic structure; very firm; few roots; few very fine vesicular and tubular pores; many distinct continuous grayish brown (10YR 5/2) clay films and prominent light gray (10YR 7/2) clay depletions on faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine rounded weakly cemented iron-manganese concretions; 2 percent pebbles; brittle; very strongly acid; gradual wavy boundary.
- 3Btb—59 to 80 inches; brownish yellow (10YR 6/8) clay loam; strong coarse subangular blocky structure; firm; few very fine tubular pores; common distinct discontinuous gray (10YR 6/1) clay films on faces of peds; few fine prominent gray (10YR 6/1) iron depletions in the matrix; common medium rounded weakly cemented iron-manganese concretions; 5 percent pebbles; strongly acid.

MLRA Range in Characteristics

Depth to the base of the argillic horizon: 60 to more than 90 inches

Depth to a fragipan: 25 to 40 inches

Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8; redoximorphic depletions in the lower part

Texture—silt loam or silty clay loam

pH range—4.5 to 5.5

Btx/E horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8 (Btx);

hue of 10YR, value of 5 to 8, and chroma of 1 to 4 (E); redoximorphic features present

Texture—silt loam or silty clay loam (Btx); silt loam or silt (E)
pH range—4.5 to 5.5

2Btx horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 8; redoximorphic features present
Texture—silt loam or silty clay loam
Content of rock fragments—1 to 4 percent pebbles
pH range—4.5 to 5.5

3Btb horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 8; redoximorphic features present
Texture—loam or clay loam
Content of rock fragments—2 to 10 percent pebbles
pH range—4.5 to 6.0

Ayrshire Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Aeric Endoaqualfs

Typical Pedon for the Series

Ayrshire fine sandy loam, on a convex slope of 1 percent, in a cultivated field; 1,100 feet north and 150 feet east of the center of sec. 25, T. 10 N., R. 7 W.; Clay County, Indiana.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) fine sandy loam, light brownish gray (10YR 6/2) dry; weak very fine granular structure; friable; neutral; abrupt smooth boundary.

BEg—8 to 14 inches; light brownish gray (10YR 6/2) fine sandy loam; weak medium platy structure; friable; common fine roots; many faint light gray (10YR 7/2) clay depletions on faces of peds; common fine distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; neutral; clear wavy boundary.

Bt—14 to 27 inches; yellowish brown (10YR 5/4) loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; many distinct continuous light brownish gray (10YR 6/2) clay films on faces of peds; common faint light gray (10YR 7/2) clay depletions on faces of prisms; common fine distinct strong brown (7.5YR 5/6) masses in which iron has accumulated and many fine distinct light brownish gray (10YR 6/2) iron depletions are in the matrix; moderately acid; gradual wavy boundary.

Btg1—27 to 35 inches; light brownish gray (10YR 6/2) sandy clay loam; weak coarse prismatic structure parting to moderate medium and coarse subangular blocky; firm; many faint discontinuous grayish brown (10YR 5/2) clay films on faces of peds; few faint distinct light gray (10YR 7/2) clay depletions on vertical faces of prisms; many fine distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common black (10YR 2/1) weakly cemented iron-manganese concretions; strongly acid; gradual wavy boundary.

Btg2—35 to 45 inches; gray (10YR 6/1) fine sandy loam; weak coarse and very coarse subangular blocky structure; friable; few faint patchy grayish brown (10YR 5/2) clay films on faces of peds; many fine distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few fine and medium black (10YR 2/1) rounded weakly cemented iron-manganese concretions; slightly acid; clear wavy boundary.

BC—45 to 55 inches; yellowish brown (10YR 5/6) fine sandy loam; weak very coarse subangular blocky structure; friable; common fine distinct strong brown (7.5YR 5/6) masses in which iron has accumulated and many medium distinct light brownish gray (10YR 6/2) iron depletions are in the matrix; common fine and medium black (10YR 2/1) rounded weakly cemented iron-manganese concretions; neutral; clear wavy boundary.

C—55 to 60 inches; yellowish brown (10YR 5/4) fine sand with strata of fine sandy loam; massive and single grain; loose; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; neutral.

Series Range in Characteristics

Depth to the base of the argillic horizon: 40 to 60 inches

Content of rock fragments: 0 to 1 percent throughout the series control section

A or Ap horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 1 or 2 (A); hue of 10YR, value of 4 or 5, and chroma of 2 or 3 (Ap)

Texture—fine sandy loam

pH range—5.6 to 7.3; depends upon liming history

BEg or Eg horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 1 or 2

Texture—fine sandy loam, sandy loam, or loam

pH range—5.6 to 7.3

Bt or Btg1 horizon:

Color—hue of 10YR, value of 4 to 7, and chroma of 1 to 6

Texture—sandy clay loam, loam, or clay loam
pH range—5.1 to 6.5

Btg2, Bt2, BC, or BCg horizon:

Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 to 6

Texture—fine sandy loam or sandy loam
pH range—5.1 to 7.3

C or Cg horizon:

Color—hue of 2.5Y, 10YR, or 7.5YR; value of 4 to 7; and chroma of 1 to 6

Texture—stratified fine sand, loamy fine sand, fine sandy loam, or loam; thin strata of silt loam or silt in some pedons
pH range—6.6 to 8.4

Belknap Series

Taxonomic classification: Coarse-silty, mixed, active, acid, mesic Fluvaquentic Endoaquepts

Typical Pedon for the MLRA

Belknap silt loam, on a slope of 1 percent, in a cultivated field; 900 feet east and 2,450 feet south of the northwest corner of sec. 6, T. 9 N., R. 5 W.; Owen County, Indiana.

Ap—0 to 8 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; moderate fine granular structure; friable; common very fine roots; many very fine interstitial pores; moderately acid; abrupt smooth boundary.

A—8 to 13 inches; brown (10YR 5/3) silt loam; weak medium platy structure; friable; common very fine roots; common very fine interstitial and tubular pores; common fine distinct light brownish gray (10YR 6/2) iron depletions and few prominent strong brown (7.5YR 4/6) masses that have accumulated iron and are in the matrix; few fine rounded weakly cemented iron-manganese concretions; moderately acid; clear wavy boundary.

Cg1—13 to 22 inches; light brownish gray (10YR 6/2) silt loam; massive; friable; common very fine roots; few tubular pores; common fine prominent strong brown (7.5YR 5/8) masses that have accumulated iron and are in the matrix; few fine rounded weakly cemented iron-manganese concretions; very strongly acid; clear wavy boundary.

Cg2—22 to 34 inches; light brownish gray (10YR 6/2) silt loam; massive; friable; few very fine roots; few

very fine tubular pores; common fine prominent strong brown (7.5YR 5/8) masses that have accumulated iron and are in the matrix; few fine rounded weakly cemented iron-manganese concretions; very strongly acid; gradual wavy boundary.

Cg3—34 to 47 inches; light brownish gray (10YR 6/2) silt loam; massive; friable; many fine prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine rounded weakly cemented iron-manganese concretions; very strongly acid; gradual wavy boundary.

Cg4—47 to 60 inches; light brownish gray (10YR 6/2) loam; massive; friable; many medium prominent strong brown (7.5YR 4/6) masses that have accumulated iron and are in the matrix; strongly acid.

MLRA Range in Characteristics*Ap or A horizon:*

Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3

pH range—4.5 to 7.3; depends upon liming history

C or Cg horizon:

Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 4

Texture—silt loam; loam below a depth of 40 inches in some pedons

pH range—4.5 to 5.5 above a depth of 40 inches; ranges to 6.0 below a depth of 40 inches

Birds Series

Taxonomic classification: Fine-silty, mixed, superactive, nonacid, mesic Typic Fluvaquents

Typical Pedon for the Series

Birds silt loam, in a cultivated field; 600 feet west and 50 feet north of the center of sec. 13, T. 3 N., R. 12 W.; Lawrence County, Illinois.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; neutral; abrupt smooth boundary.

ACg—6 to 22 inches; gray (10YR 6/1) silt loam; weak fine granular; friable; common fine distinct dark yellowish brown (10YR 4/4) and brown (10YR 5/3) masses that have accumulated iron and are in the matrix; few very dark grayish brown (10YR 3/2) masses in which iron-manganese has accumulated; neutral; gradual smooth boundary.

Cg—22 to 60 inches; gray (10YR 6/1) silt loam; massive; friable; common medium and coarse distinct dark yellowish brown (10YR 4/4) and light olive brown (2.5Y 5/4) masses in which iron has accumulated and grayish brown (10YR 5/2) iron depletions are in the matrix; few brown (10YR 5/3) iron-manganese concretions; slightly alkaline.

Series Range in Characteristics

Ap, A, or ACg horizon:

Color—hue of 10YR, 2.5Y, or 5Y; value of 4 to 6; and chroma of 1 or 2; redoximorphic features present

pH range—5.6 to 7.3

Cg horizon:

Color—hue of 10YR, 2.5Y, or 5Y; value of 4 to 7; and chroma of 1 or 2; redoximorphic features present

Texture—dominantly silt loam; strata of silty clay loam, clay loam, loam, or sandy loam below a depth of 40 inches in some pedons

pH range—5.6 to 7.8

Bloomfield Series

Taxonomic classification: Sandy, mixed, mesic
Lamellic Hapludalfs

Typical Pedon for the MLRA

Bloomfield loamy sand, on a convex slope of 9 percent, in an area of Alvin-Bloomfield loamy sands in a cultivated field; 300 feet east and 50 feet south of the center of sec. 27, T. 9 N., R. 4 W.; Owen County, Indiana.

Ap—0 to 8 inches; brown (10YR 4/3) loamy sand, pale brown (10YR 6/3) dry; weak fine granular structure; very friable; many very fine and fine roots; many very fine and fine interstitial and tubular pores; slightly acid; abrupt smooth boundary.

E—8 to 16 inches; dark yellowish brown (10YR 4/4) loamy sand; weak fine subangular blocky structure; very friable; many very fine and fine roots; common very fine and fine tubular pores; neutral; clear wavy boundary.

E and Bt—16 to 38 inches; dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) loamy sand (E); weak coarse subangular blocky structure; very friable; common very fine and fine roots; common very fine and fine tubular pores; brown (7.5YR 4/4) sandy loam bands (Bt) that are 1/4- to 1/2-inch thick with a total thickness of 6 inches; weak medium subangular blocky structure;

very friable; few very fine and fine roots; common very fine and fine tubular pores; common distinct discontinuous brown (7.5YR 4/4) clay bridging sand grains; few common discontinuous brown (7.5YR 4/4) clay films on faces of pedis and in pores; neutral; clear wavy boundary.

Bt and E—38 to 70 inches; brown (7.5YR 4/4) and dark brown (7.5YR 3/4) fine sandy loam, sandy loam, and loamy sand bands that are 1 inch to 8 inches thick with a total thickness of 24 inches (Bt); weak medium subangular blocky structure; very friable; few very fine tubular pores; common faint discontinuous dark brown (7.5YR 3/4) clay bridging sand grains; brown (7.5YR 5/4) loamy sand (E); weak fine subangular blocky structure; loose; neutral; clear wavy boundary.

C—70 to 80 inches; yellowish brown (10YR 5/4) sand with a few thin strata of loamy sand and silt; single grain; loose; slightly alkaline; slightly effervescent.

MLRA Range in Characteristics

Thickness of the solum: 60 to more than 80 inches

A or Ap horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2 to 4 (A); hue of 10YR, value of 4, and chroma of 3 or 4 (Ap)

Texture—loamy fine sand, loamy sand, sand, or fine sand

pH range—5.6 to 7.3

E horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 4 to 6

Texture—loamy fine sand, loamy sand, fine sand, or sand

E part of E and Bt or Bt and E horizons:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 6

Texture—loamy sand, loamy fine sand, fine sand, or sand

pH range—5.6 to 7.3

Bt part of E and Bt or Bt and E horizons:

Color—hue of 7.5YR, 10YR, or 5YR; value of 3 to 5; and chroma of 3 to 6

Texture—sandy loam, fine sandy loam, loamy sand, loamy fine sand, sand, or fine sand

pH range—5.6 to 7.3

C horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 4 to 6

Texture—sand, fine sand, loamy fine sand; thin strata of loamy sand or silt in some pedons

pH range—6.1 to 8.4

Bonnie Series

Taxonomic classification: Fine-silty, mixed, active, acid, mesic Typic Fluvaquents

Typical Pedon for the MLRA

Bonnie silt loam, on a slope of 0.5 percent, in a cultivated field; 1,160 feet west and 1,385 feet north of the center of sec. 9, T. 4 N., R. 7 E.; Owen County, Indiana.

Ap—0 to 9 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; moderate medium granular structure; friable; common very fine roots; common fine distinct light brownish gray (10YR 6/2) iron depletions throughout; few fine rounded iron-manganese concretions throughout; slightly acid; abrupt smooth boundary.

Cg1—9 to 20 inches; light brownish gray (10YR 6/2) silt loam; weak coarse platy structure; friable; few very fine roots; common medium faint pale brown (10YR 6/3) iron depletions in the matrix; common prominent yellowish red (5YR 4/6) iron stains lining pores and root channels; few fine rounded iron-manganese concretions; common fine irregular iron nodules; slightly acid; gradual wavy boundary.

Cg2—20 to 31 inches; light gray (10YR 7/2) silt loam; massive; friable; few very fine roots; common medium prominent yellowish brown (10YR 5/6) masses in which iron has accumulated and few distinct pale brown (10YR 6/3) iron depletions are in the matrix; few prominent yellowish red (5YR 4/6) iron stains lining pores and root channels; few fine rounded iron-manganese concretions throughout; few fine irregular iron nodules; strongly acid; gradual wavy boundary.

Cg3—31 to 47 inches; gray (10YR 6/1) silt loam; massive; friable; few medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common prominent yellowish red (5YR 4/6) iron stains lining pores and root channels; few medium irregular iron-manganese concretions throughout; common fine irregular iron nodules; strongly acid; gradual wavy boundary.

Cg4—47 to 60 inches; light gray (10YR 7/1) silt loam; massive; friable; common medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common prominent yellowish red (5YR 5/8) iron stains lining pores; common fine irregular iron nodules; strongly acid.

MLRA Range in Characteristics

A or Ap horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 1 to 3

Texture—silt loam

pH range—4.5 to 7.3

Cg horizon:

Color—hue of 10YR, 2.5Y, or N; value of 5 to 7; and chroma of 0 to 2

Texture—silt loam; silty clay loam below a depth 40 inches

pH range—4.5 to 6.5

Caneyville Series

Taxonomic classification: Fine, mixed, active, mesic Typic Hapludalfs

Typical Pedon for the MLRA

Caneyville silt loam, on a slope of 15 percent, in an area of pasture; 300 feet south and 100 feet west of the northeast corner of sec. 20, T. 6 N., R. 1 W., Lawrence County, Indiana.

Ap—0 to 8 inches; 90 percent brown (10YR 4/3), light yellowish brown (10YR 6/4) dry, and 10 percent dark yellowish brown (10YR 4/4) silt loam, light yellowish brown (10YR 6/4) dry; moderate medium granular structure; friable; many fine roots; neutral; abrupt smooth boundary.

Bt1—8 to 14 inches; dark yellowish brown (10YR 4/4) silt loam; common medium distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; friable; few fine roots; many faint discontinuous dark yellowish brown (10YR 4/4) clay films on faces of peds; neutral; clear wavy boundary.

2Bt2—14 to 33 inches yellowish red (5YR 4/6) silty clay; strong coarse angular blocky structure; firm; many distinct discontinuous yellowish red (5YR 4/8) clay films on faces of peds; 1-inch layer of dark yellowish brown (10YR 4/4) clay at a depth of 32 inches; strongly acid, and neutral at 32 inches; abrupt smooth boundary.

2R—33 inches; indurated limestone.

MLRA Range in Characteristics

Thickness of the solum and depth to lithic contact: 20 to 40 inches

Thickness of the loess: 0 to 18 inches

Kind of rock fragments: Rock fragments are chert and limestone.

A or Ap horizon:

Color—hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 or 3 (A); hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 or 4 (Ap)

Texture—silt loam

Content of rock fragments—0 to 5 percent pebbles

pH range—5.1 to 7.3

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8

Texture—silt loam or silty clay loam

Content of rock fragments—0 to 5 percent pebbles

pH range—5.1 to 7.3

2Bt horizon:

Color—hue of 7.5YR, 5YR, or 2.5YR; value of 4 or 5; and chroma of 4 to 8

Texture—silty clay or clay

Content of rock fragments—0 to 15 percent pebbles

pH range—5.1 to 7.3

Chetwynd Series

Taxonomic classification: Fine-loamy, mixed, semiativ, mesic Typic Hapludults

Typical Pedon for the Series

Chetwynd silt loam, on a slope of 45 percent, in a forest; 2,375 feet north and 1,385 feet east of the southwest corner of sec. 13, T. 11 N., R. 1 E.; Morgan County, Indiana.

Oi—0 to 1 inch; partially decomposed leaf litter.

A—1 to 3 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; many fine and medium roots; many very fine and fine interstitial and tubular pores; moderately acid; abrupt wavy boundary.

E—3 to 12 inches; brown (10YR 5/3) silt loam; weak very fine subangular blocky structure; friable; common fine and medium roots throughout; common very fine and fine interstitial and tubular pores; very strongly acid; clear wavy boundary.

Bt1—12 to 20 inches; yellowish red (5YR 4/6) clay loam; moderate fine subangular blocky structure; firm; few fine and medium roots; common very fine and fine tubular pores; common distinct discontinuous reddish brown (5YR 4/4) clay films on faces of peds and in pores; 1 percent fine pebbles; very strongly acid; clear wavy boundary.

Bt2—20 to 29 inches; yellowish red (5YR 5/6) sandy clay loam; moderate fine subangular blocky

structure; friable; few fine and medium roots; common very fine and fine tubular pores; many distinct discontinuous reddish brown (5YR 4/4) clay films on faces of peds and in pores; 1 percent fine pebbles; very strongly acid; clear wavy boundary.

Bt3—29 to 39 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; firm; few fine and medium roots; few very fine and fine tubular pores; many distinct continuous reddish brown (5YR 4/4) clay films on faces of peds and in pores; 10 percent fine pebbles; very strongly acid; clear wavy boundary.

Bt4—39 to 48 inches; yellowish red (5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; few very fine and fine tubular pores; common distinct discontinuous reddish brown (5YR 4/4) clay films on faces of peds and in pores; 14 percent fine pebbles; very strongly acid; clear wavy boundary.

Bt5—48 to 56 inches; brown (7.5YR 4/4) coarse sandy loam; weak medium subangular blocky structure; very friable; few very fine and fine tubular pores; few patchy distinct reddish brown (5YR 4/4) clay films on faces of peds and in pores; many distinct continuous reddish brown (5YR 4/4) clay bridging sand grains; 10 percent fine pebbles; very strongly acid; gradual wavy boundary.

2Bt6—56 to 75 inches; brown (7.5YR 4/4) loamy sand; weak coarse subangular blocky structure; very friable; common distinct discontinuous dark brown (7.5YR 3/4) clay bridging sand grains; 1 percent fine pebbles; very strongly acid; gradual wavy boundary.

2CB and Bt—75 to 80 inches; yellowish brown (10YR 5/6) sand (CB); single grain; loose; 1/2- to 1-inch bands of brown (7.5YR 4/4) loamy sand (Bt) with total thickness of 2 inches; 1 percent pebbles; strongly acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: 60 to 80 or more inches

A, Ap, or E horizon:

Color—hue of 10YR, value of 3, and chroma of 2 or 3 (A); hue of 10YR, value of 4 or 5, and chroma of 3 or 4 (Ap); hue of 10YR, value of 5 or 6, and chroma of 3 or 4 (E)

Texture—loam or silt loam

Content of rock fragments—0 to 15 percent pebbles

pH range—4.5 to 6.0 in nonlimed areas; ranges to 7.3 in limed areas

BE or Bt horizon:

Color—hue of 10YR to 5YR, value of 4 or 5, and chroma of 4 to 8; one or more subhorizons with hue of 5YR

Texture—loam, sandy clay loam, or clay loam above a depth of 40 inches; sandy loam, loam, sandy clay loam, or coarse sandy loam or the gravelly analogs of these textures below a depth of 40 inches

Content of rock fragments—0 to 15 percent pebbles above a depth of 40 inches; 0 to 25 percent pebbles below a depth of 40 inches

pH range—4.5 to 5.5

2Bt and 2CB and Bt horizons:

Color—hue of 10YR to 5YR, value of 4 to 6, and chroma of 4 or 6

Texture—loamy sand, sand with bands of loamy sand, or sandy loam

Content of rock fragments—0 to 25 percent pebbles
pH range—4.5 to 6.0

Cincinnati Series

Taxonomic classification: Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs

Taxadjunct features: The Cincinnati soils in map units Cincinnati silt loam, 12 to 18 percent slopes, eroded, and Cincinnati silt loam, 12 to 18 percent slopes, severely eroded, do not have a subhorizon with a fragipan that has vertical streaks that have a mean horizontal dimension of 4 inches or more. This difference, however, does not affect the usefulness or behavior of the soils.

Typical Pedon for the MLRA

Cincinnati silt loam, on a slope of 7 percent, in a field of hay; 550 feet south and 320 feet east of the northwest corner of sec. 13, T. 2 N., R. 8 E.; Scott County, Indiana.

Ap—0 to 8 inches; 85 percent brown (10YR 4/3), pale brown (10YR 6/3) dry; and 15 percent yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure parting to moderate medium granular; friable; many very fine and fine roots; moderately acid; abrupt smooth boundary.

Bt—8 to 24 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; common very fine and fine roots; many distinct continuous dark yellowish brown (10YR 4/6) clay films on faces of peds; strongly acid; clear wavy boundary.

2Btx1—24 to 36 inches; yellowish brown (10YR 5/6) silt loam; moderate very coarse prismatic structure; firm; few very fine roots between peds; many distinct discontinuous grayish brown (10YR 5/2) and common strong brown (7.5YR 5/6) clay films on vertical faces of peds; few fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; 1 percent pebbles; brittle; very strongly acid; gradual wavy boundary.

2Btx2—36 to 51 inches; brownish yellow (10YR 6/6) loam; moderate very coarse prismatic structure; very firm; common prominent discontinuous grayish brown (10YR 5/2) clay films on vertical faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; 2 percent pebbles; brittle; strongly acid; gradual wavy boundary.

2Btx3—51 to 74 inches; yellowish brown (10YR 5/6) loam; weak coarse prismatic structure; firm; common distinct discontinuous grayish brown (10YR 5/2) clay films on vertical faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; 5 percent pebbles; brittle; very strongly acid; diffuse wavy boundary.

3Bt—74 to 80 inches; strong brown (7.5YR 5/8) clay loam; weak coarse subangular blocky structure; firm; common prominent discontinuous gray (10YR 6/1) clay films on faces of peds; 3 percent pebbles; strongly acid.

MLRA Range in Characteristics

Depth to a fragipan: 20 to 36 inches; 10 to 20 inches where severely eroded

Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4

Texture—silt loam

pH range—4.5 to 7.3

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8

Texture—silt loam or silty clay loam

pH range—4.5 to 5.5

2Btx horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 6; redoximorphic depletions present

Texture—silt loam or loam

pH range—4.5 to 5.5; ranges to 6.0 in the lower part

3Bt horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8

Texture—clay loam

Content of rock fragments—3 to 10 percent

pH range—4.5 to 6.0; ranges to 6.5 in the lower part

Corydon Series

Taxonomic classification: Clayey, mixed, superactive, mesic Lithic Argiudolls

Typical Pedon for the Series

Corydon flaggy silty clay loam, on a convex slope of 45 percent, in a forest; 1,900 feet north and 325 feet west of the southeast corner of sec. 4, T. 10 N., R. 3 W.; Owen County, Indiana.

A1—0 to 1 inch; very dark grayish brown (10YR 3/2) flaggy silty clay loam, dark grayish brown (10YR 4/2) dry; moderate very fine subangular blocky structure; friable; many very fine and fine roots; many very fine and fine interstitial and tubular pores; 20 percent limestone flagstones; neutral; abrupt smooth boundary.

A2—1 to 5 inches; very dark grayish brown (10YR 3/2) flaggy silty clay loam, dark grayish brown (10YR 4/2) dry; moderate very fine angular blocky structure; friable; many very fine and fine roots; common very fine and fine tubular pores; many faint continuous very dark gray (10YR 3/1) organic coatings on faces of pedis and in pores; 16 percent limestone flagstones; neutral; clear wavy boundary.

Bt1—5 to 9 inches; dark brown (10YR 3/3) silty clay, brown (10YR 5/3) dry; moderate fine angular blocky structure; firm; common very fine and fine roots; few very fine and fine tubular pores; many continuous distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of pedis and in pores; 10 percent limestone channers; neutral; clear wavy boundary.

Bt2—9 to 13 inches; dark yellowish brown (10YR 3/4) silty clay; strong fine and medium angular blocky structure; firm; common very fine and fine roots between pedis; few very fine and fine tubular pores; many distinct continuous very dark grayish brown (10YR 3/2) organo-clay films on faces of pedis; 10 percent limestone channers; neutral; gradual wavy boundary.

Bt3—13 to 17 inches; dark yellowish brown (10YR 3/4) silty clay; strong medium angular blocky structure; firm; few very fine and fine roots between pedis;

common distinct continuous very dark grayish brown (10YR 3/2) organo-clay films on faces of pedis; 14 percent limestone channers; neutral; abrupt irregular boundary.

2R—17 inches; indurated limestone bedrock.

Series Range in Characteristics

Depth to the base of the argillic horizon: 10 to 20 inches

Depth to lithic contact: 10 to 20 inches

A horizon:

Color—hue of 10YR, value of 2 or 3, and chroma of 1 to 3

Texture—flaggy silty clay loam, silty clay loam, or silt loam or the channery analogs of these textures

Content of rock fragments—5 to 35 percent channers and flagstones

pH range—6.1 to 7.8

Bt horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 3 or 4

Texture—silty clay or clay and the channery, flaggy, very channery, or very flaggy analogs of these textures

Content of rock fragments—5 to 40 percent channers and flagstones

pH range—6.1 to 7.8

Crider Series

Taxonomic classification: Fine-silty, mixed, active, mesic Typic Paleudalfs

Typical Pedon for the MLRA

Crider silt loam, on a slope of 9 percent, in an area of pasture; 1,200 feet west and 1,900 feet south of the northeast corner of sec. 25, T. 9 N., R. 3 W.; Owen County, Indiana.

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; many very fine roots; many very fine and fine interstitial and tubular pores; very strongly acid; abrupt smooth boundary.

Bt1—7 to 11 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine subangular blocky structure; friable; many very fine roots; common very fine and fine tubular pores; few faint discontinuous yellowish brown (10YR 4/4) clay films on faces of pedis; moderately acid; clear wavy boundary.

Bt2—11 to 16 inches; dark yellowish brown (10YR 4/6) silty clay loam; weak fine subangular blocky

structure; friable; many fine roots; common very fine and fine vesicular and tubular pores; common distinct continuous dark brown (7.5YR 3/4) clay films on faces of peds and in pores; moderately acid; clear wavy boundary.

Bt3—16 to 22 inches; strong brown (7.5YR 4/6) silty clay loam; moderate fine subangular blocky structure; friable; many fine roots; common very fine and fine vesicular and tubular pores; many distinct continuous brown (7.5YR 4/4) clay films on faces of peds and in pores; strongly acid; clear wavy boundary.

Bt4—22 to 36 inches; strong brown (7.5YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable; many fine roots; few very fine and fine vesicular and tubular pores; many distinct continuous brown (7.5YR 4/4) clay films on faces of peds and in pores; very strongly acid; clear wavy boundary.

Bt5—36 to 43 inches; brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common fine roots; few very fine and fine vesicular and tubular pores; many prominent continuous yellowish red (5YR 4/6) clay films on faces of peds and in pores; common distinct discontinuous pale brown (10YR 6/3) silt coatings on vertical faces of peds; very strongly acid; gradual wavy boundary.

2Bt6—43 to 53 inches; red (2.5YR 4/6) silty clay; strong very fine and fine angular blocky structure; firm; common fine roots; many prominent continuous reddish brown (5YR 4/4) clay films on faces of peds and in pores; common distinct discontinuous pale brown (10YR 6/3) silt coatings on vertical faces of peds; very strongly acid; gradual wavy boundary.

2Bt7—53 to 68 inches; red (2.5YR 4/6) clay; strong fine angular blocky structure; very firm; many distinct continuous reddish brown (2.5YR 4/4) clay films on faces of peds and in pores; 1 percent limestone channers; slightly acid; gradual wavy boundary.

2Bt8—68 to 80 inches; red (2.5YR 4/6) clay; strong fine angular blocky structure; very firm; many prominent continuous dark reddish brown (2.5YR 3/4) clay films on faces of peds and in pores; 10 percent limestone channers; neutral.

MLRA Range in Characteristics

Depth to the base of the argillic horizon: 60 to more than 100 inches

Depth to lithic contact: 60 to more than 100 inches

Thickness of the loess: 20 to 45 inches

Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4

Texture—silt loam

pH range—4.5 to 7.3; depends upon liming history

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8

Texture—silt loam or silty clay loam

pH range—4.5 to 6.0

2Bt horizon:

Color—hue of 5YR or 2.5YR, value of 3 to 5, and chroma of 4 to 8

Texture—silty clay or clay

Content of rock fragments—0 to 15 percent pebbles and channers

pH range—4.5 to 6.0; ranges to 7.3 in the lower part

Dubois Series

Taxonomic classification: Fine-silty, mixed, active, mesic Aeric Fragiaqualfs

Taxadjunct features: The Dubois soils in this survey area do not have a subhorizon with a fragipan that has vertical streaks that have a mean horizontal dimension of 4 inches or more. This difference, however, does not affect the usefulness or behavior of the soils.

Typical Pedon for the Series

Dubois silt loam, on a convex slope of 1 percent, in a cultivated field; 725 feet east and 1,450 feet south of the northwest corner of sec. 35, T. 4 N., R. 6 E.; Scott County, Indiana.

Ap—0 to 10 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak very coarse subangular blocky structure parting to moderate medium granular; friable; common very fine and fine roots; common fine and medium rounded iron and manganese concretions; neutral; clear smooth boundary.

BE—10 to 17 inches; brownish yellow (10YR 6/6) silt loam; weak medium subangular blocky structure; friable; few very fine roots between peds; few prominent discontinuous strong brown (7.5YR 4/6) iron stains on faces of peds; many medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few fine and medium rounded iron

and manganese concretions; very strongly acid; clear wavy boundary.

Bt1—17 to 23 inches; light brownish gray (10YR 6/2) silty clay loam; weak medium prismatic structure parting to moderate coarse angular blocky; firm; few very fine roots between peds; common distinct continuous grayish brown (10YR 5/2) clay films on faces of peds; few prominent discontinuous strong brown (7.5YR 5/6) iron stains on faces of peds; many light gray (10YR 7/2) clay depletions on faces of peds; many medium distinct yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; extremely acid; clear wavy boundary.

Bt2—23 to 38 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium prismatic structure parting to moderate coarse angular blocky; firm; few very fine roots between peds; many prominent continuous gray (10YR 6/1) clay films on faces of peds; many fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; many strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; extremely acid; gradual wavy boundary.

2Btx1—38 to 62 inches; dark yellowish brown (10YR 4/6) silt loam; moderate very coarse prismatic structure; very firm; common prominent continuous gray (10YR 6/1), brown (10YR 5/3), and common prominent discontinuous reddish brown (5YR 4/4) clay films on vertical faces of peds; common fine prominent light brownish gray (10YR 6/2) iron depletions in the matrix; many distinct strong brown (7.5YR 4/6) masses that have accumulated iron and are in the matrix; brittle; very strongly acid; gradual wavy boundary.

2Btx2—62 to 82 inches; brownish yellow (10YR 6/6) silty clay loam; weak coarse and very coarse prismatic structure; firm; common prominent continuous gray (10YR 5/1) and brown (10YR 4/3) clay films on vertical faces of peds; few prominent discontinuous reddish brown (5YR 4/4) iron oxide stains on vertical faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; brittle; strongly acid; diffuse wavy boundary.

2Bt—82 to 96 inches; strong brown (7.5YR 5/6) silty clay loam; moderate coarse angular blocky structure; very firm; many prominent continuous light brownish gray (10YR 6/2) clay films on faces of peds; common medium distinct light gray (10YR 7/2) iron depletions in the matrix; common medium faint brownish yellow (10YR 6/6) masses that have accumulated iron and are in the matrix; neutral.

Series Range in Characteristics

Depth to a fragipan: 22 to 40 inches

A or Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4

Texture—silt loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

BE or EB horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 2 to 6

Texture—silt loam

pH range—4.5 to 6.0

Bt or Btg horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 1 to 4; where the chroma in the matrix is 3 or 4, 50 percent or more of the ped faces have a chroma of 2 or less.

Texture—silt loam or silty clay loam

pH range—3.5 to 5.0

Btx or 2Btx horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 6

Texture—silt loam, silty clay loam, or loam

pH range—4.5 to 5.5; ranges to 3.5

2Bt or 2Btg horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 1 to 8

Texture—silt loam, silty clay loam, loam, clay loam, or sandy clay loam

Content of rock fragments—0 to 2 percent pebbles

pH range—5.1 to 7.3

Ebal Series

Taxonomic classification: Fine, mixed, active, mesic Oxyaquic Hapludalfs

Typical Pedon for the Series

Ebal silt loam, on a convex, south-facing slope of 15 percent, in a forested area; 2,060 feet south and 920 feet east of the northwest corner of sec. 8, T. 7 N., R. 2 W.; Monroe County, Indiana.

A—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; many fine, medium, and coarse roots; 10 percent sandstone channers; strongly acid, clear smooth boundary.

BE—3 to 8 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; many fine, medium, and coarse roots; 10 percent sandstone channers, 3 percent more than $\frac{3}{4}$ -inch in length; strongly acid; clear wavy boundary.

Bt1—8 to 13 inches; yellowish brown (10YR 5/4) channery silt clay loam; moderate medium subangular blocky structure; firm; common fine and medium roots; common faint discontinuous yellowish brown (10YR 5/4) clay films on faces of pedis; 23 percent sandstone channers; very strongly acid; clear wavy boundary.

2Bt2—13 to 21 inches; yellowish brown (10YR 5/4) very channery silty clay; moderate medium subangular blocky structure; firm; common fine and medium roots; common faint discontinuous yellowish brown (10YR 5/4) clay films on faces of pedis; 30 percent sandstone channers; very strongly acid; clear wavy boundary.

2Bt3—21 to 41 inches; red (2.5YR 4/6) clay; strong medium angular blocky structure; firm; few fine and medium roots; common distinct discontinuous yellowish brown (10YR 5/6) clay films on faces of pedis; many prominent medium gray (10YR 6/1) iron depletions in the matrix; very strongly acid; clear wavy boundary.

2Bt4—41 to 48 inches; yellowish brown (10YR 5/4) clay; moderate medium angular blocky structure; firm; few fine and medium roots; common distinct discontinuous yellowish brown (10YR 5/4) clay films on faces of pedis; many coarse distinct gray (10YR 6/1) iron depletions and many coarse prominent red (2.5YR 4/6) masses that have accumulated iron and are in the matrix; very strongly acid; clear wavy boundary.

2Bt5—48 to 61 inches; yellowish brown (10YR 5/4) clay; moderate medium angular blocky structure; firm; few fine and medium roots; common dark gray (10YR 4/1) and brown (10YR 5/3) slickensides; many coarse distinct gray (10YR 6/1) iron depletions and strong brown (7.5YR 5/8) masses that have accumulated iron and are in the matrix; strongly acid; gradual wavy boundary.

2Cr—61 to 80 inches; gray (10YR 6/1) moderately cemented shale; many distinct brown (7.5YR 4/4) iron coatings on shale fragments; strongly acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: 50 to more than 80 inches

Depth to paralithic contact: 50 to more than 80 inches

A, Ap, or BE horizon:

Color—hue of 10YR, value of 3 to 5, and chroma of 2 to 4

Texture—silt loam or silty clay loam

Content of rock fragments—0 to 12 percent

pH range—4.5 to 7.3; depends upon liming history

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 to 6

Texture—silt loam, loam, or silty clay loam or the channery or very channery analogs of these textures

Content of rock fragments—0 to 40 percent
pH range—4.5 to 5.5

2Bt or 2BC horizon:

Color—hue of 5Y to 2.5YR, value of 4 to 6, and chroma of 1 to 8

Texture—clay or silty clay; channery and very channery analogs of these textures in the upper part

Content of rock fragments—0 to 40 percent in the upper part; 0 to 5 percent in the lower part
pH range—3.5 to 6.0 in the upper part; ranges to 7.3 in the lower part

2Cr horizon:

Color—hue of 5Y to 7.5YR, value of 5 or 6, and chroma of 1

Elston Series

Taxonomic classification: Coarse-loamy, mixed, active, mesic Typic Argiudolls

Typical Pedon for the Series

Elston sandy loam, on a convex slope of 1 percent, in a cultivated area; 1,300 feet east and 500 feet north of the center of sec. 14, T. 13 N., R. 9 W.; Vigo County, Indiana.

Ap—0 to 10 inches; very dark brown (10YR 2/2) sandy loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; very friable; moderately acid; abrupt smooth boundary.

A—10 to 20 inches; very dark brown (10YR 2/2) sandy loam, dark grayish brown (10YR 4/2) dry; weak coarse subangular blocky structure; friable; moderately acid; gradual wavy boundary.

Bt1—20 to 34 inches; dark brown (7.5YR 3/4) sandy loam, light brownish gray (10YR 6/2) dry; weak coarse subangular blocky structure; very friable; thin dark brown (7.5YR 3/2) clay coatings on some sand grains and bridges between sand grains; few pebbles; moderately acid; gradual wavy boundary.

Bt2—34 to 45 inches; brown (7.5YR 4/4) loamy sand; weak coarse subangular blocky structure; very

friable; thin dark brown (7.5YR 3/2) clay bridging sand grains; few pebbles; moderately acid; gradual wavy boundary.

BC—45 to 72 inches; brown (7.5YR 4/4) loamy sand; single grain; loose; few pebbles; moderately acid; clear wavy boundary.

C—72 to 80 inches; pale brown (10YR 6/3) fine sand and sand; single grain; loose; few pebbles; strongly effervescent; moderately alkaline.

Series Range in Characteristics

Depth to the base of soil development: 40 to 80 inches

Content of rock fragments: 0 to 15 percent pebbles throughout the profile

Ap or A horizon:

Color—hue of 10YR, value of 2 or 3, and chroma of 1 to 3

Texture—loam or sandy loam

pH range—5.1 to 7.3

Bt horizon:

Color—hue of 5YR, 7.5YR, or 10YR; value of 3 to 5; and chroma of 2 to 6

Texture—loam or sandy loam; subhorizons of sandy clay loam or loamy sand

pH range—5.1 to 6.5

BC horizon:

Color—hue of 5YR, 7.5YR, or 10YR; value of 3 to 5; and chroma of 2 to 4

Texture—loamy sand or sand

pH range—5.1 to 6.5

C horizon:

Texture—stratified sand, fine sand, or gravelly sand

pH range—7.4 to 8.4; ranges to 5.6

Gallimore Series

Taxonomic classification: Coarse-loamy, mixed, active, mesic Typic Dystrudepts

Typical Pedon for the Series

Gallimore loam, on a linear slope of 40 percent, in a forest; 2,550 feet north and 250 feet west of the southeast corner of sec. 33, T. 11 N., R. 3 W.; Owen County, Indiana.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate very fine granular structure; friable; many very fine and fine roots; many fine and medium interstitial and tubular pores; 1 percent pebbles; strongly acid; abrupt wavy boundary.

E—4 to 9 inches; 95 percent dark yellowish brown (10YR 4/4) loam; weak very fine subangular blocky structure; friable; many fine and medium roots; many fine and medium interstitial and tubular pores; 5 percent very dark grayish brown (10YR 3/2) loam filling wormcasts and channels; 1 percent pebbles; very strongly acid; clear wavy boundary.

Bt1—9 to 20 inches; strong brown (7.5YR 4/6) loam; weak fine subangular blocky structure; friable; common fine roots; common fine and medium tubular pores; common distinct discontinuous brown (7.5YR 4/4) clay films on faces of peds and in pores; 1 percent pebbles; very strongly acid; clear wavy boundary.

Bt2—20 to 29 inches; strong brown (7.5YR 4/6) loam; weak medium subangular blocky structure; friable; few fine roots; common very fine and fine tubular pores; common distinct continuous brown (7.5YR 4/4) clay films on faces of peds and in pores; 1 percent pebbles; very strongly acid; gradual wavy boundary.

Bt3—29 to 42 inches; brown (7.5YR 4/4) sandy loam; weak medium subangular blocky structure; very friable; few fine roots; common very fine and fine tubular pores; few distinct discontinuous dark brown (7.5YR 3/4) clay films on faces of peds and in pores; common distinct discontinuous dark brown (7.5YR 3/4) clay bridging sand grains; 2 percent pebbles; very strongly acid; gradual wavy boundary.

Bt4—42 to 54 inches; brown (7.5YR 4/4) sandy loam; weak coarse subangular blocky structure; very friable; common very fine and fine tubular pores; few distinct discontinuous dark brown (7.5YR 3/4) clay films on faces of peds and in pores; common distinct discontinuous dark brown (7.5YR 3/4) clay bridging sand grains; 3 percent pebbles; very strongly acid; gradual wavy boundary.

E/Bt—54 to 80 inches; 80 percent light yellowish brown (10YR 6/4) sand (E); single grain; loose; and 20 percent lamellae (Bt) of brown (7.5YR 4/4) sand; weak fine subangular blocky structure; very friable; common distinct discontinuous brown (7.5YR 4/4) clay bridges between sand grains; very strongly acid.

Series Range in Characteristics

Depth to the base of the cambic horizon: 50 to more than 100 inches

Content of rock fragments: 0 to 10 percent pebbles in the upper part of the solum; 0 to 25 percent in the lower part

A, Ap, or E horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2 or 3 (A); hue of 10YR, value of 4 or 5, and chroma of 4 to 6 (Ap or E)

Texture—loam or sandy loam

pH range—4.5 to 5.5 in nonlimed areas; 7.3 in limed areas

Bt1 or Bt2 horizon:

Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8

Texture—loam or sandy loam

pH range—4.5 to 5.5

Bt3 or Bt4 horizon:

Color—hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 or 6

Texture—sandy loam or fine sandy loam

pH—4.5 to 5.5

E part of E/Bt horizon:

Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 or 6

Texture—sand

pH range—4.5 to 6.0

Bt part of E/Bt horizon:

Color—hue of 7.5YR or 5YR, value of 4 to 6, and chroma of 4 or 6

Texture—sand, loamy sand, or sandy loam or the gravelly analogs of these textures

pH range—4.5 to 6.0

Gessie Series

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Fluventic Eutrudepts

Typical Pedon for the Series

Gessie silt loam, in a nearly level area in a cultivated field; 650 feet north and 40 feet east of the old Mississinewa River Bridge in Francis Godfrey Reserve No. 9, T. 27 N., R. 4 E.; Miami County, Indiana.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, grayish brown (10YR 5/2) dry; weak fine and medium granular structure; friable; few fine roots; slightly effervescent; slightly alkaline; abrupt smooth boundary.

A—6 to 10 inches; dark grayish brown (10YR 4/2) silt loam, grayish brown (10YR 5/2) dry; weak fine and medium subangular blocky structure; firm; few roots; slightly effervescent; slightly alkaline; clear smooth boundary.

Bw1—10 to 33 inches; brown (10YR 4/3) silt loam; weak fine subangular blocky structure; friable; few

roots; few fine shell fragments; slightly effervescent; slightly alkaline; clear smooth boundary.

Bw2—33 to 43 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; friable; common medium faint yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; strongly effervescent; slightly alkaline; clear smooth boundary.

C—43 to 60 inches; brown (10YR 5/3) silt loam with thin strata of sandy loam and loamy sand; massive; friable; strongly effervescent; moderately alkaline.

Series Range in Characteristics

Depth to the base of the cambic horizon: 30 to 60 inches

Reaction: Slightly alkaline or moderately alkaline throughout the control section; free carbonates are present throughout the control section.

Ap or A horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3

Texture—silt loam

Bw horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4

Texture—silt loam or loam

C horizon:

Color—hue of 10YR, value of 5, and chroma of 3 or 4

Texture—silt loam, loam, or sandy loam; thin strata of loamy sand or sand

Grayford Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Ultic Hapludalfs

Taxadjunct features: The Grayford soils in map units Grayford silt loam, 12 to 18 percent slopes, severely eroded, and Grayford-Ryker silt loams, 12 to 18 percent slopes, eroded, have a thicker loess cap than is defined as the range for the series. The Grayford soils in this survey area have a higher base status than is definitive for the series. These differences, however, do not affect the usefulness or behavior of the soils.

Typical Pedon for the Series

Grayford silt loam, on a 13 percent side slope, in an area of pasture; 750 feet west and 1,130 feet north of the southeast corner of sec. 29, T. 4 N., R. 9 E.; Jefferson County, Indiana.

Ap—0 to 6 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak medium granular structure; friable; many fine roots; neutral; abrupt smooth boundary.

Bt1—6 to 12 inches; strong brown (7.5YR 5/6) silt loam; weak medium subangular blocky structure; friable; few discontinuous strong brown (7.5YR 5/6) clay films on faces of peds; common fine roots; moderately acid; gradual smooth boundary.

Bt2—12 to 22 inches; strong brown (7.5YR 5/6) silt loam; moderate medium subangular blocky structure; friable; few fine roots many discontinuous reddish brown (5YR 4/4) clay films on faces of peds; few fine very dark gray (10YR 3/1) iron-manganese concretions in the matrix; very strongly acid; gradual wavy boundary.

2Bt3—22 to 33 inches; yellowish red (5YR 5/6) loam; moderate medium angular and subangular blocky structure; firm; many discontinuous reddish brown (5YR 4/4) clay films on faces of peds and in root channels; many medium very dark gray (10YR 3/1) iron-manganese concretions in the matrix; 3 percent pebbles; very strongly acid; gradual wavy boundary.

2Bt4—33 to 45 inches; yellowish red (5YR 5/6) clay loam; moderate medium subangular blocky structure; firm; many discontinuous reddish brown (5YR 4/4) clay films on faces of peds and in roots channels; many medium very dark gray (10YR 3/1) iron-manganese concretions in the matrix; 3 percent pebbles; strongly acid; gradual wavy boundary.

3Bt5—45 to 52 inches; reddish brown (5YR 4/4) clay; weak very coarse blocky structure; very firm; common discontinuous reddish brown (5YR 4/4) clay films on faces of peds; many medium very dark gray (10YR 3/1) iron-manganese concretions in the matrix; 3 percent subangular chert pebbles; 10 percent subangular chert cobbles; strongly acid; abrupt wavy boundary.

3R—52 inches; limestone bedrock.

Series Range in Characteristics

Depth to the base of the argillic horizon: 40 to 60 inches

Depth to lithic contact: 40 to 60 inches

Depth to clayey residuum: 35 to 55 inches

A, Ap, or E horizon:

Color—hue to 10YR or 7.5YR, value of 3 or 4, and chroma of 2 or 3 (A); hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4 (Ap); hue of 10YR, value of 5, and chroma of 4 to 6 (E) (where present)

Texture—silt loam

Content of rock fragments—0 to 5 percent pebbles
pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

Bt or BE horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8

Texture—silt loam or silty clay loam

Content of rock fragments—0 to 5 percent pebbles

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas in the upper part

2Bt horizon:

Color—hue of 5YR, 7.5YR, or 10YR; value of 4 or 5; and chroma of 4 to 8

Texture—loam, clay loam, silt loam, or silty clay loam

Content of rock fragments—1 to 10 percent pebbles

pH range—4.5 to 5.5

3Bt or 3BC horizon:

Color—hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8 (3Bt); hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 3 or 4 (3BC)

Texture—silty clay or clay

Content of rock fragments—2 to 35 percent pebbles (chert)

pH range—5.1 to 6.0 in the upper part; ranges to 7.3 in the lower part

Greybrook Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Hapludalfs

Typical Pedon for the Series

Greybrook silt loam, on a slope of 35 percent, in a forest; 2,700 feet west and 1,200 feet south of the northeast corner of sec. 22, T. 12 N., R. 3 W.; Owen County, Indiana.

A1—0 to 2 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; weak fine granular structure; friable; many very fine and fine roots; many very fine interstitial pores; very strongly acid; abrupt smooth boundary.

A2—2 to 5 inches; brown (10YR 4/3) silt loam; weak very fine subangular blocky structure; friable; many very fine and fine roots; common very fine interstitial pores; 5 percent dark brown (10YR 3/3) silt loam filling channels and pores; very strongly acid; clear wavy boundary.

E—5 to 10 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure;

friable; common very fine and fine roots; common very fine vesicular and tubular pores; very strongly acid; clear wavy boundary.

BE—10 to 15 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; common very fine and fine roots; common very fine vesicular and tubular pores; very strongly acid; gradual wavy boundary.

2Bt1—15 to 25 inches; yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; friable; few very fine and fine roots; few very fine vesicular and tubular pores; many continuous distinct dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; 1 percent fine pebbles; very strongly acid; clear wavy boundary.

2Bt2—25 to 35 inches; light yellowish brown (10YR 6/4) clay loam; many fine distinct grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; firm; few very fine vesicular and tubular pores; many distinct continuous dark brown (10YR 3/3) clay films on faces of peds and in pores; 2 percent fine pebbles; very strongly acid; gradual wavy boundary.

2Bt3—35 to 52 inches; strong brown (7.5YR 5/8) clay loam; many medium distinct grayish brown (10YR 5/2) mottles; moderate medium and coarse subangular blocky structure; firm; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds and in pores; 4 percent fine pebbles; moderately acid; gradual wavy boundary.

2Btg—52 to 62 inches; gray (10YR 6/1) loam; weak coarse prismatic structure; firm; many distinct continuous light brownish gray (10YR 6/2) clay films on faces of peds and in pores; few fine prominent light yellowish brown (10YR 6/4) and brown (7.5YR 5/4) masses that have accumulated iron and are in the matrix; 2 percent fine pebbles; neutral; clear wavy boundary.

2Cg—62 to 80 inches; light brownish gray (2.5Y 6/2) stratified silt, silty clay loam, and clay loam; massive; firm; many coarse prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; 1 percent fine pebbles; strongly effervescent in places; slightly alkaline.

Series Range in Characteristics

Depth to the base of the argillic horizon: 55 to 80 inches

Thickness of the loess: 10 to 20 inches

Content of rock fragments: 0 to 5 percent fine pebbles in the 2Bt and 2C horizons

A horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2 or 3

Texture—silt loam

pH range—4.5 to 5.0 in nonlimed areas; ranges to 7.3 in limed areas

BE or E horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 4 to 6

Texture—silt loam

pH range—4.5 to 5.0 in nonlimed areas; ranges to 7.3 in limed areas

2Bt or 2Btg horizon:

Color—hue of 10YR, 7.5YR, or 2.5Y; value of 5 or 6; and chroma of 1 to 8

Texture—clay loam, loam, or silt loam

pH range—4.5 to 5.5 in the upper part; ranges to 7.3 in the lower part

2Cg or 2C horizon:

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 6

Texture—stratified silt loam, clay loam, silty clay loam, or silt

pH range—6.6 to 7.8

Haggatt Series

Taxonomic classification: Fine, mixed, active, mesic Typic Hapludalfs

Typical Pedon for the Series

Haggatt silt loam, on a slope of 16 percent, in a pasture field; 400 feet north and 1,500 feet east of the southwest corner of sec. 11, T. 1 S., R. 4 E.; Washington County, Indiana.

Ap—0 to 5 inches; 90 percent brown (10YR 4/3), pale brown (10YR 6/3) dry, and 10 percent strong brown (7.5YR 5/6) silt loam; moderate medium granular structure; friable; many fine roots; very strongly acid; abrupt smooth boundary.

Bt1—5 to 16 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; many fine roots; many fine pores; many distinct continuous brown (7.5YR 4/4) clay films on faces of peds; 12 percent pebbles; very strongly acid; clear wavy boundary.

2Bt2—16 to 25 inches; red (2.5YR 4/6) clay; moderate medium angular blocky structure; firm; common fine roots; common fine pores; many distinct continuous reddish brown (2.5YR 4/4) clay films on faces of peds; 3 percent pebbles; very strongly acid; clear wavy boundary.

2Bt3—25 to 36 inches; red (2.5YR 4/6) clay; moderate medium angular blocky structure; very firm; few fine roots; few fine pores; many distinct continuous

- reddish brown (2.5YR 4/4) clay films on faces of peds; very strongly acid; clear wavy boundary.
- 2Bt4—36 to 44 inches; strong brown (7.5YR 4/6) clay; strong coarse angular blocky structure; very firm; many distinct continuous brown (7.5YR 4/4) clay films on faces of peds; common medium very dark gray (10YR 3/1) iron-manganese concretions; neutral; clear wavy boundary.
- 2R—44 inches; light gray (10YR 7/1) fractured, indurated limestone bedrock.

Series Range in Characteristics

Depth to the base of the argillic horizon: 40 to 60 inches

Depth to lithic contact: 40 to 60 inches

Thickness of the loess: 0 to 20 inches

Rock fragments: Mainly pebble-sized chert

Ap horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 6

Texture—silt loam

Content of rock fragments—0 to 10 percent

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6

Texture—silt loam or silty clay loam

Content of rock fragments—0 to 14 percent

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas in the upper part

2Bt horizon:

Color—hue of 7.5YR, 5YR, or 2.5YR; value of 4 or 5; and chroma of 4 to 6; hue of 5YR or redder in some pedons

Texture—silty clay or clay

Content of rock fragments—0 to 10 percent

pH range—4.5 to 5.5 in the upper part; ranges to 7.3 in the lower part

Haubstadt Series

Taxonomic classification: Fine-silty, mixed, active, mesic Aquic Fragiudalfs

Taxonomic features: The Haubstadt soils in this survey area do not have a subhorizon with a fragipan that has vertical streaks with a mean horizontal dimension of 4 inches or more. This difference, however, does not affect the usefulness or behavior of the soils.

Typical Pedon for the MLRA

Haubstadt silt loam, on a slope of 4 percent, in a cultivated field; 1,930 feet east and 500 feet south of the center of sec. 18, T. 4 N., R. 7 E.; Scott County, Indiana.

Ap—0 to 7 inches; 80 percent dark yellowish brown (10YR 4/4) and 20 percent yellowish brown (10YR 5/6) silt loam, light yellowish brown (10YR 6/4) and very pale brown (10YR 7/4) dry; weak medium subangular blocky structure parting to moderate medium granular; friable; common very fine and fine roots; few fine rounded iron and manganese concretions; slightly acid; abrupt smooth boundary.

BE—7 to 14 inches; yellowish brown (10YR 5/6) silt loam; weak fine subangular blocky structure; friable; few very fine and fine roots between peds; many faint light yellowish brown (10YR 6/4) silt coatings on faces of peds; common distinct discontinuous dark yellowish brown (10YR 4/4) organic coatings in root channels; few common fine rounded iron and manganese concretions; very strongly acid; clear wavy boundary.

Bt1—14 to 20 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; few very fine and fine roots between peds; many distinct discontinuous pale brown (10YR 6/3) silt coatings on faces of peds; common distinct discontinuous dark yellowish brown (10YR 4/4) and few brown (10YR 5/3) clay films on faces of peds; few fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine rounded iron and manganese concretions; very strongly acid; clear wavy boundary.

Bt2—20 to 32 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium prismatic structure parting to moderate coarse subangular blocky; firm; few very fine roots between peds; many continuous distinct dark yellowish brown (10YR 4/4) and common discontinuous grayish brown (10YR 5/2) clay films on faces of peds; many distinct continuous pale brown (10YR 6/3) silt coatings on faces of peds; few fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine rounded iron and manganese concretions; very strongly acid; gradual irregular boundary.

Btx1—32 to 54 inches; brownish yellow (10YR 6/6) silt loam; moderate very coarse prismatic structure parting to moderate coarse subangular blocky; very firm; few very fine roots between peds; many

continuous prominent grayish brown (10YR 5/2) and common distinct brown (10YR 4/3) clay films on vertical faces of peds; many distinct continuous light gray (10YR 7/2) clay depletions on faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine rounded iron and manganese concretions; brittle; very strongly acid; gradual wavy boundary.

Btx2—54 to 61 inches; brownish yellow (10YR 6/6) silty clay loam; weak very coarse prismatic structure; very firm; many prominent continuous grayish brown (10YR 5/2) and common distinct brown (10YR 4/3) clay films on vertical faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine rounded iron and manganese concretions; brittle; very strongly acid; gradual wavy boundary.

2Bt—61 to 80 inches; strong brown (7.5YR 5/6) silty clay loam; moderate coarse subangular blocky structure; firm; many prominent continuous gray (10YR 5/1) clay films on faces of peds; common coarse prominent light brownish gray (10YR 6/2) iron depletions in the matrix; common medium and coarse distinct yellowish red (5YR 5/6) masses that have accumulated iron and are in the matrix; very strongly acid.

MLRA Range in Characteristics

Depth to a fragipan: 20 to 40 inches in uneroded pedons; ranges to 12 inches in severely eroded pedons

Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—silt loam
pH range—4.5 to 7.3

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 6; redoximorphic depletions present
Texture—silt loam or silty clay loam
pH range—4.5 to 5.5

Btx horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 to 8; redoximorphic depletions present
Texture—silt loam or silty clay loam
pH range—4.5 to 5.5

2Bt horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 to 8; redoximorphic depletions present

Texture—loam, clay loam, silt loam, or silty clay loam

Content of rock fragments—0 to 10 percent

pH range—4.5 to 7.3

Haymond Series

Taxonomic classification: Coarse-silty, mixed, superactive, mesic Dystric Fluventic Eutrudepts

Typical Pedon for the Series

Haymond silt loam, in a nearly level area in a cultivated field; 1,800 feet east and 300 feet north of the southwest corner of sec. 2, T. 1 S., R. 11 W.; Knox County, Indiana.

Ap—0 to 10 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; common fine roots; slightly acid; abrupt smooth boundary.

Bw1—10 to 25 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common fine roots; common distinct continuous brown (10YR 4/3) organic coatings on faces of peds; slightly acid; clear smooth boundary.

Bw2—25 to 44 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; few distinct discontinuous dark yellowish brown (10YR 4/4) organic coatings on faces of peds; neutral; clear smooth boundary.

C—44 to 60 inches; yellowish brown (10YR 5/4) fine sandy loam; massive; weak bedding planes; friable; slightly alkaline.

Series Range in Characteristics

Depth to the base of the cambic horizon: 30 to 50 inches

A or Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4
Texture—silt loam
pH range—5.6 to 7.3

Bw horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—silt loam
pH range—5.6 to 7.3

C horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—silt loam, loam, fine sandy loam, or sandy loam

Content of rock fragments—0 to 5 percent pebbles
pH range—6.1 to 7.8

Hickory Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Hapludalfs

Typical Pedon for the MLRA

Hickory loam, on a slope of 35 percent, in a forest; 1,305 feet west and 845 feet north of the center of sec. 22, T. 4 N., R. 7 E.; Scott County, Indiana.

- A—0 to 4 inches; 80 percent very dark brown (10YR 2/2) and 20 percent yellowish brown (10YR 5/4) loam, dark grayish brown (10YR 4/2) and very pale brown (10YR 7/4) dry; moderate medium granular structure; very friable; many fine roots; 2 percent pebbles; very strongly acid; abrupt smooth boundary.
- E—4 to 11 inches; yellowish brown (10YR 5/4) loam; weak fine subangular blocky structure parting to moderate medium granular; friable; common fine and medium roots; few fine rounded iron and manganese concretions; 2 percent pebbles; very strongly acid; clear smooth boundary.
- Bt1—11 to 20 inches; yellowish brown (10YR 5/6) loam; moderate medium subangular blocky structure; friable; common fine and medium roots between pedis; common faint discontinuous yellowish brown (10YR 5/6) clay films on faces of pedis; common distinct discontinuous light yellowish brown (10YR 6/4) silt coatings on faces of pedis; common medium rounded iron-manganese concretions; 3 percent pebbles; strongly acid; clear wavy boundary.
- Bt2—20 to 29 inches; yellowish brown (10YR 5/6) clay loam; moderate medium and coarse subangular blocky structure; firm; few fine and medium roots between pedis; many distinct continuous dark yellowish brown (10YR 4/6) clay films on faces of pedis; common distinct discontinuous light yellowish brown (10YR 6/4) silt coatings on faces of pedis; common medium irregular iron and manganese concretions; 2 percent pebbles; very strongly acid; clear wavy boundary.
- Bt3—29 to 39 inches; yellowish brown (10YR 5/6) loam; moderate coarse subangular blocky structure; firm; few fine and medium roots between pedis; many distinct continuous brown (7.5YR 4/4) clay films on faces of pedis; few patchy distinct light yellowish brown (10YR 6/4) silt coatings on

faces of pedis; few medium irregular iron and manganese masses; 3 percent pebbles; very strongly acid; gradual wavy boundary.

- BCt—39 to 45 inches; yellowish brown (10YR 5/6) loam; weak coarse subangular blocky structure; firm; few fine roots between pedis; common distinct continuous brown (7.5YR 4/4) clay films on faces of pedis; 6 percent pebbles; slightly alkaline; gradual wavy boundary.
- CB—45 to 51 inches; yellowish brown (10YR 5/6) loam; massive; firm; very few patchy distinct brown (7.5YR 4/4) clay films in root channels; 6 percent pebbles; strongly effervescent; moderately alkaline; gradual wavy boundary.
- C—51 to 60 inches; light yellowish brown (10YR 6/4) loam; massive; firm; 6 percent pebbles; strongly effervescent; moderately alkaline.

MLRA Range in Characteristics

Depth to the base of the argillic horizon: More than 40 inches

Thickness of the loess: 0 to 20 inches

Thickness of the A horizon: 1 to 4 inches

A or Ap horizon:

Color—hue of 10YR, value of 2 to 4, and chroma of 2 or 3 (A); hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6 (Ap)

Texture—silt loam or loam

pH range—4.5 to 6.0; ranges to 7.3 in limed areas

E horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 3 or 4

Texture—silt loam or loam

pH range—4.5 to 6.0

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6

Texture—clay loam or loam

pH range—4.5 to 6.0 in the upper part; ranges to 7.3 in the lower part

BCt or CB horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6

Texture—clay loam or loam

pH range—5.6 to 8.4

C horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 3 to 6

Texture—loam or clay loam

pH range—7.4 to 8.4

Hollybrook Series

Taxonomic classification: Fine-loamy, mixed, active, nonacid, mesic Alfic Udarents

Typical Pedon for the Series

Hollybrook silt loam, on a slope of 4 percent, in a cultivated field; 800 feet east and 1,600 feet south of the northwest corner of sec. 13, T. 10 N., R. 6 W.; Owen County, Indiana.

Ap—0 to 8 inches; 90 percent dark yellowish brown (10YR 4/4) and 10 percent yellowish brown (10YR 5/4) silt loam, light yellowish brown (10YR 6/4) and brownish yellow (10YR 6/6) dry; weak medium granular structure; friable; many fine roots; 1 percent pebbles; neutral; clear smooth boundary.

A/Cd—8 to 23 inches; 60 percent dark yellowish brown (10YR 4/4), 35 percent yellowish brown (10YR 5/6) silt loam, and 5 percent yellowish brown (10YR 5/6) silty clay loam; massive; very firm; $\frac{1}{4}$ - to 1-inch thick platy clods with horizontal cleavage planes and vertical cracks that are 1 to 3 inches apart; common very fine roots between clods; very few faint patchy grayish brown (10YR 5/2) and brown (10YR 5/3) clay films throughout; 1 percent pebbles; brittle; slightly acid; clear smooth boundary.

2Cd1—23 to 54 inches; 85 percent yellowish brown (10YR 5/4), 10 percent dark yellowish brown (10YR 4/4), and 5 percent gray (10YR 6/1) that consists of 65 percent clay loam, 15 percent silt loam, 10 percent silty clay loam, and 10 percent loam; massive; extremely firm; 1- to 4-inch thick clods with horizontal cleavage planes and vertical cracks 3 to 10 inches apart; few fine flat roots between clods; very few faint patchy grayish brown (10YR 5/2) and brown (10YR 5/3) clay films throughout; 1 percent pebbles; 20 percent dark gray (10YR 4/1) parachanners (shale) mixed into lower 4 inches; moderately acid; clear smooth boundary.

3Cd2—54 to 80 inches; 50 percent parachanners (shale); 40 percent dark gray (10YR 4/1) silty clay loam; 5 percent shale, sandstone, and siltstone channers; and 5 percent bodies of clay loam; massive; firm; very few faint patchy grayish brown (10YR 5/2) and brown (10YR 5/3) clay films throughout; neutral.

Series Range in Characteristics

Individual layers within these soils are variable in thickness and composition. Pedons have soil clods with relict horizons from pre-mined soils; these soil clods are randomly distributed throughout the profile.

Many of the soil clods have identifiable properties, including redoximorphic features and clay films, that are characteristic of the pre-mined soils. Pebbles and channers are dominantly very strongly cemented or indurated. The soils were reconstructed with dozers and earth-moving pans.

Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6

Texture—silt loam

Content of rock fragments—0 to 3 percent (mainly chert or channers of sandstone, siltstone, or shale)

pH range—5.6 to 7.3

A/Cd horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 1 to 8

Texture—silt loam or silty clay loam; pockets of loam or clay loam in some pedons

Content of rock fragments—1 to 5 percent (mainly chert or channers of sandstone, siltstone, or shale)

pH range—5.1 to 7.3

2Cd horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 1 to 8

Texture—silt loam, clay loam, loam, or silty clay loam

Content of rock fragments—average 1 to 5 percent pebbles (mainly chert or channers of sandstone, siltstone, or shale); pockets of soft shale mixed into the lower 4 to 12 inches in some pedons

pH range—5.1 to 7.3

3Cd horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 0 to 8

Texture—silty clay loam, silt loam, or loam; strata or pockets of silty clay in some pedons

Content of rock fragments—average 2 to 15 percent pebbles (mainly sandstone, siltstone, or shale)

pH range—6.1 to 7.3

Holton Series

Taxonomic classification: Coarse-loamy, mixed, active, nonacid, mesic Aeric Endoaquepts

Typical Pedon for the Series

Holton silt loam, in a nearly level area in an idle field (fig. 18); 1,050 feet east and 200 feet south of the

northwest corner of sec. 29, T. 10 N., R. 13 E.; Ripley County, Indiana.

Ap—0 to 7 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; weak very fine granular structure; friable; many very fine roots; slightly acid; gradual smooth boundary.

BA—7 to 14 inches; brown (10YR 5/3) loam; weak medium subangular blocky structure; friable; many fine roots; few fine faint dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; slightly acid; abrupt smooth boundary.

Bg1—14 to 20 inches; grayish brown (10YR 5/2) fine sandy loam; weak medium prismatic structure parting to weak medium subangular blocky; friable; common fine roots; many coarse distinct yellowish brown (10YR 5/4) and few fine distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; moderately acid; gradual smooth boundary.

Bg2—20 to 31 inches; grayish brown (10YR 5/2) fine sandy loam; weak medium prismatic structure parting to weak medium subangular blocky; friable; few fine roots; many medium distinct yellowish brown (10YR 5/4) and few fine distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; strongly acid; gradual smooth boundary.

Bg3—31 to 41 inches; grayish brown (10YR 5/2) fine sandy loam; weak medium prismatic structure parting to weak fine subangular blocky; friable; few fine roots; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; strongly acid; gradual smooth boundary.

Cg—41 to 60 inches; grayish brown (10YR 5/2) fine sandy loam; massive; very friable; many coarse distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; slightly acid.

Series Range in Characteristics

Depth to the base of the cambic horizon: 22 to 48 inches

A or Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3

Texture—silt loam or loam

pH range—5.6 to 7.3

BA, Bw, or Bg horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 1 to 6; redoximorphic depletions present

Texture—silt loam, loam, fine sandy loam, or

sandy loam; layers of loamy sand 1 to 3 inches thick in some pedons

Content of rock fragments—0 to 10 percent pebbles

pH range—5.1 to 7.3; 5.6 or higher in at least one horizon

C or Cg horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 1 to 4

Texture—fine sandy loam, sandy loam, loam, or sandy clay loam; strata of loamy sand or loamy fine sand in some pedons

Content of rock fragments—0 to 15 percent pebbles

pH range—6.1 to 7.3

Hoosierville Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Typic Epiaqualfs

Typical Pedon for the Series

Hoosierville silt loam, in a broad, flat area in a cultivated field; 1,550 feet west and 600 feet north of the southeast corner of sec. 6, T. 11 N., R. 6 W.; Clay County, Indiana.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light gray (10YR 7/2) dry; weak medium granular structure; friable; many medium and fine roots; common fine interstitial pores; few fine black (10YR 2/1) weakly cemented iron and manganese concretions; slightly acid; abrupt smooth boundary.

Eg—9 to 13 inches; grayish brown (10YR 5/2) silt loam; weak thick platy structure; friable; common fine roots; common fine and very fine tubular pores; common medium distinct yellowish brown (10YR 5/6) masses in which iron has accumulated throughout; common distinct discontinuous light gray (10YR 7/2) clay depletions on faces of peds; slightly acid; clear wavy boundary.

Btg1—13 to 18 inches; light brownish gray (10YR 6/2) silt loam; weak medium subangular blocky structure; firm; common fine roots; common fine and very fine tubular pores; common distinct discontinuous grayish brown (10YR 5/2) clay films on faces of peds and lining pores; common medium distinct yellowish brown (10YR 5/6) irregularly shaped masses that have accumulated iron, that have diffuse boundaries, and are throughout the matrix; many medium distinct light gray (10YR 7/2) clay depletions on faces of peds; dark grayish brown (10YR 4/2) silt loam fillings in krotovinas that make up 20 percent of the mass;

common fine distinct black (10YR 2/1) weakly cemented iron and manganese concretions; moderately acid; clear wavy boundary.

Btg2—18 to 27 inches; gray (10YR 6/1) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky and angular blocky; firm; few fine roots; common very fine and fine tubular pores; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds and lining pores; many medium distinct yellowish brown (10YR 5/8) irregularly shaped masses that have accumulated iron, that have diffuse boundaries, and are throughout the matrix; many medium distinct light gray (10YR 7/2) clay depletions on faces of peds; dark grayish brown (10YR 4/2) silt loam fillings in krotovinas that make up 20 percent of the mass; common fine distinct black (10YR 2/1) weakly cemented iron and manganese concretions throughout the matrix; common distinct discontinuous black (10YR 2/1) manganese accumulations lining pores; strongly acid; clear wavy boundary.

Btg3—27 to 40 inches; gray (10YR 6/1) silty clay loam; moderate medium and coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common very fine and fine tubular pores; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds and lining pores; common medium distinct yellowish brown (10YR 5/6) irregularly shaped masses that have accumulated iron, that have diffuse boundaries, and are throughout the matrix; common fine prominent strong brown (7.5YR 5/8) irregularly shaped masses that have accumulated iron, that have sharp boundaries, and are throughout the matrix; common distinct continuous light gray (10YR 7/2) clay depletions on vertical faces of peds; dark grayish brown (10YR 4/2) silt loam fillings in krotovinas that make up 15 percent of the mass; common fine distinct black (10YR 2/1) weakly cemented iron and manganese concretions throughout the matrix; common thin distinct black (10YR 2/1) manganese masses lining pores; strongly acid; clear wavy boundary.

Btx1—40 to 50 inches; yellowish brown (10YR 5/6) silt loam; moderate medium and coarse prismatic structure; firm; few very fine roots between peds; common very fine tubular and vesicular pores; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds and lining pores; many medium distinct gray (10YR 6/1) irregularly shaped iron depletions with sharp boundaries in the matrix; common distinct continuous light gray

(10YR 7/2) clay depletions on vertical faces of peds; common medium distinct black (10YR 2/1) weakly cemented iron and manganese concretions in the matrix; many distinct discontinuous black (10YR 2/1) soft manganese accumulations lining pores; 30 percent brittle; moderately acid; clear wavy boundary.

Btx2—50 to 58 inches; strong brown (7.5YR 5/8) silt loam; moderate coarse prismatic structure; firm; few very fine roots in cracks between peds; few very fine vesicular and tubular pores; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds and lining pores; many medium distinct gray (10YR 6/1) irregularly shaped iron depletions with sharp boundaries in the matrix; few distinct discontinuous light gray (10YR 7/2) clay depletions on vertical faces of peds; common medium distinct black (10YR 2/1) weakly cemented iron and manganese concretions in the matrix; common distinct discontinuous black (10YR 2/1) manganese accumulations lining pores; 30 percent brittle; moderately acid; gradual wavy boundary.

2Btx3—58 to 72 inches; yellowish brown (10YR 5/6) silt loam; weak medium and coarse prismatic structure; firm; common distinct discontinuous grayish brown (10YR 5/2) clay films on faces of peds; many medium distinct gray (10YR 5/1) and light brownish gray (10YR 6/2) irregularly shaped iron depletions with diffuse boundaries in the matrix; common fine distinct strong brown (7.5YR 5/6) irregularly shaped masses that have accumulated iron, that have sharp boundaries, and are throughout the matrix; common medium distinct black (10YR 2/1) weakly cemented iron and manganese concretions in the matrix; 40 percent brittle; moderately acid; gradual wavy boundary.

3Btb—72 to 80 inches; strong brown (7.5YR 5/6) loam; moderate coarse prismatic structure parting to moderate coarse subangular blocky; firm; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds; common fine distinct gray (10YR 5/1) irregularly shaped iron depletions with sharp boundaries in the matrix; few fine distinct black (10YR 2/1) weakly cemented iron and manganese concretions in the matrix; 1 percent fine pebbles; slightly acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: More than 80 inches

Thickness of the loess: 60 to 75 inches

Ap or Eg horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2

Texture—silt loam

pH range—5.1 to 7.3; depends upon liming practices

Btg or BEg horizon:

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 or less

Texture—silt loam or silty clay loam

pH range—4.5 to 6.0

Bt or 2Btx horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 1 to 8

Texture—silt loam (30 to 40 percent brittle)

pH range—4.5 to 6.0

3Btb horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 2 to 8

Texture—loam or clay loam

Content of rock fragments—average 1 to 3 percent pebbles

pH range—5.1 to 6.5

Lieber Series

Taxonomic classification: Fine-silty, mixed, active, mesic Aeric Epiaqualfs

Typical Pedon for the Series

Lieber silt loam, on a slope of 1 percent, in a cultivated field; 1,400 feet west and 250 feet south of the northeast corner of sec. 18, T. 13 N., R. 6 W.; Clay County, Indiana.

Ap—0 to 9 inches; grayish brown (10YR 5/2) silt loam, light gray (10YR 7/2) dry; moderate fine granular structure; friable; common very fine roots; common fine interstitial pores; slightly acid; abrupt smooth boundary.

EBg—9 to 12 inches; light brownish gray (10YR 6/2) silt loam; weak medium and thick platy structure parting to moderate fine granular; friable; few very fine roots; common very fine tubular pores; few fine prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common distinct discontinuous light gray (10YR 7/2) clay depletions on faces of peds; strongly acid; clear wavy boundary.

BE—12 to 19 inches; yellowish brown (10YR 5/8) silt loam; weak fine subangular blocky structure; friable; few very fine roots; common fine tubular pores; many fine distinct light brownish gray

(10YR 6/2) iron depletions in the matrix; few fine prominent dark reddish brown (5YR 3/2) masses that have accumulated iron and are in the matrix; common distinct discontinuous light brownish gray (10YR 6/2) clay depletions on vertical faces of peds; strongly acid; clear wavy boundary.

Btg—19 to 34 inches; light brownish gray (10YR 6/2) silty clay loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; firm; few very fine roots; common fine tubular pores; common distinct discontinuous grayish brown (10YR 5/2) clay films on faces of peds and lining pores; common fine distinct yellowish brown (10YR 5/8) masses that have accumulated iron and are in the matrix; common distinct discontinuous light grayish brown (10YR 6/2) clay depletions on faces of peds; few fine prominent black (10YR 2/1) and dark reddish brown (5YR 3/2) extremely weakly cemented iron and manganese concretions in the matrix; strongly acid; clear wavy boundary.

Btgx1—34 to 40 inches; light brownish gray (10YR 6/2) silty clay loam; moderate medium and fine prismatic structure parting to moderate fine and medium subangular blocky; firm; few very fine roots; common very fine tubular and vesicular pores; common distinct discontinuous grayish brown (10YR 5/2) clay films on faces of peds and lining pores; many fine distinct yellowish brown (10YR 5/8) masses that have accumulated iron and are in the matrix; common distinct discontinuous light brownish gray (10YR 6/2) clay depletions on surfaces of peds; few fine prominent black (10YR 2/1) and dark reddish brown (5YR 3/2) extremely weakly cemented iron and manganese concretions in the matrix; 30 percent brittle; strongly acid; gradual wavy boundary.

Btgx2—40 to 51 inches; light brownish gray (10YR 6/2) silt loam; weak medium and coarse prismatic structure; firm; few very fine roots; common fine and very fine tubular and vesicular pores; common distinct discontinuous grayish brown (10YR 5/2) clay films on faces of peds and lining pores; common fine distinct yellowish brown (10YR 5/8) masses that have accumulated iron and are in the matrix; few fine black (10YR 2/1) and dark reddish brown (5YR 3/4) extremely weakly cemented iron and manganese concretions in the matrix; 40 percent brittle; strongly acid; clear wavy boundary.

Btx—51 to 57 inches; dark yellowish brown (10YR 4/6) silt loam; weak coarse prismatic structure parting to weak medium subangular blocky; friable; common fine and very fine tubular and vesicular pores; common distinct discontinuous dark brown

(10YR 3/3) clay films on faces of peds and lining pores; few fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; few prominent continuous black (10YR 2/1) manganese coatings lining pores; common fine dark brown (7.5YR 3/2) extremely weakly cemented iron and manganese concretions in the matrix; 40 percent brittle; moderately acid; gradual wavy boundary.

2Btb1—57 to 67 inches; dark yellowish brown (10YR 4/6) silt loam; weak coarse prismatic structure; firm; few fine vesicular pores; common distinct discontinuous dark brown (10YR 3/3) clay films on faces of peds and lining pores; few fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine dark brown (7.5YR 3/2) extremely weakly cemented iron and manganese concretions in the matrix; moderately acid; gradual wavy boundary.

2Btb2—67 to 80 inches; yellowish brown (10YR 5/6) loam; weak medium and coarse prismatic structure; friable; common fine vesicular pores; common distinct discontinuous dark yellowish brown (10YR 3/4) clay films on faces of peds and lining pores; many continuous light gray (10YR 7/2) clay films on vertical prism faces; many fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; many fine strong brown (7.5YR 5/6) extremely weakly cemented iron-manganese concretions in the matrix; few fine black (5YR 2.5/1) weakly cemented iron and manganese concretions in the matrix; 2 percent fine pebbles; slightly acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: More than 80 inches

Thickness of the loess: 50 to 70 inches

Depth to the horizon with brittle properties: 32 to 46 inches

Ap horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 2 or 3

Texture—silt loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

BE or EBg horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 8; 50 percent or more of ped faces have chroma of 2 or less in areas where chroma in the matrix is 3 or more

Texture—silt loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 6.5 in limed areas in the upper part

Btg or Bt horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 8; 50 percent or more of ped faces have chroma of 2 or less in areas where the chroma in the matrix is 3 or more

Texture—silt loam or silty clay loam

pH range—4.5 to 6.5 in the upper part; 4.5 to 5.5 in the lower part

Btxg or Btx horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 8

Texture—silt loam or silty clay loam (30 to 40 percent slightly brittle)

pH range—4.5 to 6.0

2Btb horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8

Texture—silt loam, loam, or clay loam

Content of rock fragments—1 to 3 percent pebbles
pH range—5.6 to 6.5

Martinsville Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Hapludalfs

Typical Pedon for the Series

Martinsville loam, on a slope of 1 percent, in a cultivated field; 1,050 feet north and 2,000 feet west of the southeast corner of sec. 22, T. 16 N., R. 2 E.; Hendricks County, Indiana.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; few fine roots; neutral; abrupt smooth boundary.

BE—8 to 13 inches; brown (10YR 4/3) loam; moderate medium granular structure; friable; few fine roots; neutral; clear wavy boundary.

Bt1—13 to 17 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine subangular blocky structure; firm; few fine roots; common distinct discontinuous dark brown (10YR 3/3) clay films on faces of peds; slightly acid; clear wavy boundary.

Bt2—17 to 35 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; firm; few fine roots; many distinct continuous dark brown (10YR 3/3) clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt3—35 to 43 inches; dark yellowish brown (10YR 4/4) sandy clay loam; moderate coarse subangular blocky structure; friable; common distinct discontinuous dark yellowish brown (10YR 3/4)

clay films on faces of peds; moderately acid; clear wavy boundary.

BC—43 to 53 inches; dark yellowish brown (10YR 3/4) sandy loam; weak coarse subangular blocky structure; very friable; slightly acid; clear wavy boundary.

C—53 to 60 inches; brown (10YR 5/3), pale brown (10YR 6/3) and dark yellowish brown (10YR 3/4) stratified sandy loam, loam, or silt loam with thin strata of sand; massive; very friable; strongly effervescent; moderately alkaline.

Series Range in Characteristics

Depth to the base of the argillic horizon: 30 to 70 inches

Content of rock fragments: 0 to 10 percent fine gravel throughout

A or Ap horizon:

Color—hue of 10YR, value of 3 to 5, and chroma of 2 to 6 (A); hue of 10YR, value of 4 or 5, and chroma of 2 to 6 (Ap)

Texture—loam or silt loam

pH range—5.1 to 7.3

BE, Bt1, or Bt2 horizon:

Color—hue of 10YR or 7.5YR, value of 3 to 6, and chroma of 3 to 6

Texture—clay loam, loam, silty clay loam, or sandy clay loam in the upper part; sandy clay loam or loam in the lower part

pH range—5.1 to 7.3

Bt3 or BC horizon:

Color—hue of 10YR or 7.5YR, value of 3 to 6, and chroma of 3 to 6

Texture—loam, sandy clay loam, silt loam, sandy loam, fine sandy loam, or very fine sandy loam; stratified in some pedons

pH range—5.6 to 7.8

C horizon:

Color—hue of 10YR, value of 3 to 6, and chroma of 3 to 6

Texture—fine sandy loam, sandy loam, loam, or silt loam; stratified in some pedons; thin strata of fine sand, loamy sand, loamy fine sand, very fine sandy loam, coarse sand, or sand

pH range—7.4 to 8.4

McAdoo Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Fluventic Eutrudepts

Typical Pedon for the Series

McAdoo silty clay loam, in a cultivated field; 2,304 feet north and 164 feet west of the southeast corner of sec. 29, T. 6 S., R. 14 W.; Posey County, Indiana.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silty clay loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; many fine roots; neutral; clear smooth boundary.

Bw1—10 to 28 inches; brown (10YR 5/3) silt loam; weak fine subangular blocky structure; firm; common fine roots; common distinct continuous dark grayish brown (10YR 4/2) organic coatings on faces of peds; neutral; gradual smooth boundary.

Bw2—28 to 48 inches; brown (10YR 4/3) silt loam; weak fine subangular blocky structure; firm; common fine roots; many distinct continuous dark grayish brown (10YR 4/2) organic coatings on faces of peds; very slightly effervescent; slightly alkaline; gradual smooth boundary.

C1—48 to 55 inches; brown (10YR 4/3) silt loam; massive; very friable; few fine roots; slightly effervescent; slightly alkaline; clear smooth boundary.

C2—55 to 60 inches; brown (10YR 5/3) silt loam with thin strata of light yellowish brown (10YR 6/4) loam; massive; very friable; few fine roots; slightly effervescent; moderately alkaline.

Series Range in Characteristics

Depth to the base of the cambic horizon: 32 to 54 inches

Presence of carbonates: In at least one subhorizon above a depth of 40 inches

Ap horizon:

Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 3

Texture—silt loam

pH range—6.6 to 7.8

Bw horizon:

Color—hue of 7.5YR, 10YR, or 2.5Y; value of 4 or 5; and chroma of 3 to 6

Texture—silt loam or silty clay loam

pH range—6.6 to 7.8

C horizon:

Color—hue of 7.5YR, 10YR, or 2.5Y; value of 4 or 5; and chroma of 3 to 6

Texture—silt loam or loam

pH range—6.6 to 8.4

McGary Series

Taxonomic classification: Fine, mixed, active, mesic
Aeric Epiaqualfs

Typical Pedon for the Series

McGary silt loam, in a nearly level area in a cultivated field; 2,050 feet east and 700 feet north of the southwest corner of sec. 24, T. 6 N., R. 7 W.; Greene County, Indiana.

Ap—0 to 11 inches; dark grayish brown (10YR 4/2) silt loam, light gray (10YR 7/2) dry; weak coarse subangular blocky structure parting to moderate, fine, and medium granular; friable; neutral; abrupt smooth boundary.

2Bt—11 to 15 inches; brown (10YR 5/3) silty clay; moderate medium subangular blocky structure; firm; many continuous faint grayish brown (10YR 5/2) clay films on faces of peds; common fine distinct gray (10YR 6/1) irregularly shaped iron depletions in the matrix; moderately acid; clear smooth boundary.

2Btg1—15 to 22 inches; grayish brown (10YR 5/2) silty clay; weak fine and medium prismatic structure parting to moderate medium angular blocky; firm; many distinct continuous gray (10YR 5/1) clay films on faces of peds; common fine faint yellowish brown (10YR 5/4) irregularly shaped masses that have accumulated iron and are in the matrix; few fine black (10YR 2/1) iron and manganese concretions; neutral; clear smooth boundary.

2Btg2—22 to 27 inches; grayish brown (10YR 5/2) silty clay; moderate medium prismatic structure parting to moderate medium angular blocky; firm; many distinct continuous gray (10YR 5/1) clay films on faces of peds; common fine faint yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; slightly effervescent in places; slightly alkaline; gradual irregular boundary.

2Btg3—27 to 42 inches; gray (10YR 5/1) silty clay; moderate medium prismatic structure parting to moderate medium angular blocky; firm; common discontinuous gray (10YR 6/1) clay films on faces of peds; common fine distinct light yellowish brown (10YR 6/4) masses that have accumulated iron and are in the matrix; few fine and medium weakly cemented calcium carbonate nodules; slightly effervescent; slightly alkaline; clear irregular boundary.

2BCtkg—42 to 50 inches; gray (10YR 6/1) silty clay; weak coarse angular blocky structure; firm; few discontinuous faint gray (10YR 5/1) clay films on faces of peds; common fine distinct yellowish

brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium weakly cemented calcium carbonate nodules; strongly effervescent; moderately alkaline; gradual wavy boundary.

Cg—50 to 60 inches; gray (10YR 6/1) stratified silty clay loam and silty clay; massive; firm; common fine distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium weakly cemented calcium carbonate nodules; strongly effervescent; moderately alkaline.

Series Range in Characteristics

Depth to the base of the argillic horizon: 38 to 50 inches

Depth to carbonates: 22 to 56 inches

A or Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 1 to 4

Texture—silt loam

pH range—5.6 to 7.3

Bt or Btg horizon:

Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 6; many coatings with chroma of 2 or less on ped faces where the chroma is 3 or more

Texture—silty clay loam or silty clay

pH range—4.5 to 7.3 in the upper part; 6.6 to 7.8 in the lower part

BCtkg or BC horizon:

Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 6

Texture—silty clay or silty clay loam

pH range—6.6 to 8.4

C or Cg horizon:

Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 6

Texture—stratified silty clay or silty clay loam; thin strata of silt loam in some pedons

pH range—7.4 to 8.4

Minnehaha Series

Taxonomic classification: Fine-loamy, mixed, active, nonacid, mesic Alfic Udarents

Typical Pedon for the Series

Minnehaha silty clay loam, on a slope of 45 percent, in a forest; 250 feet south and 75 feet east of the northwest corner of sec. 12, T. 10 N., R. 6 W.; Owen County, Indiana.

- A1—0 to 1 inch; dark grayish brown (10YR 4/2) parachannery silty clay loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; many fine and medium roots; many fine and medium interstitial and tubular pores; 30 percent pararock fragments (shale); 2 percent indurated sandstone channers; neutral; clear smooth boundary.
- A2—1 to 3 inches; dark gray (10YR 4/1) parachannery silty clay loam; common fine prominent yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; firm; many fine and medium roots; common fine and medium interstitial and tubular pores; 30 percent pararock fragments (shale); 5 percent indurated sandstone channers; slightly acid; gradual irregular boundary.
- C1—3 to 15 inches; 45 percent irregularly shaped clods of yellowish brown (10YR 5/6) silty clay loam, 45 percent dark gray (10YR 4/1) pararock fragments (shale) and 10 percent sandstone channers; massive; firm; common fine and medium roots; common fine and medium interstitial and tubular pores; few faint discontinuous yellowish brown (10YR 5/6) clay films on faces of clods; slightly acid; gradual irregular boundary.
- C2—15 to 60 inches; 50 percent dark gray (10YR 4/1) pararock fragments (shale), 30 percent irregularly shaped clods of yellowish brown (10YR 5/6) loam, and 10 percent clods of dark gray (10YR 4/1) silt loam; massive; firm; common and medium roots; few fine interstitial and tubular pores; few faint discontinuous yellowish brown (10YR 5/6) clay films on faces of clods; 10 percent indurated sandstone flagstones; neutral in places and slightly alkaline in places.

Series Range in Characteristics

Individual layers within the soil are variable in thickness and composition. Soil clods of relict horizons from pre-mined soils are randomly distributed throughout the profile. These clods have identifiable properties, such as redoximorphic depletions and clay films, that are characteristic of the pre-mined soil.

A horizon:

- Color—hue of 10YR, value of 4 or 5, and chroma of 1 to 6
- Texture—parachannery or very parachannery analogs of silty clay loam
- Content of rock fragments—0 to 10 percent very strongly cemented or indurated sandstone, siltstone, or shale (mainly channers)
- Content of pararock fragments—20 to 50 percent (shale)
- pH range—5.6 to 7.3

C horizon:

- Color—hue of 10YR, value of 4 to 6, and chroma of 1 to 8
- Texture—mixed parachannery to extremely parachannery analogs of silty clay loam, silt loam, clay loam, or loam or the channery analogs of these textures
- Content of rock fragments—mainly channers and flagstones; average 2 to 15 percent very strongly cemented or indurated sandstone, siltstone, or shale
- Content of pararock fragments—35 to 80 percent (shale)
- pH range—5.6 to 8.4

Montgomery Series

Taxonomic classification: Fine, mixed, active, mesic Vertic Endoaquolls

Typical Pedon for the Series

Montgomery silty clay loam, in a slightly concave depression in a cultivated field (fig. 19); 2,500 feet west and 380 feet north of the southeast corner of sec. 26, T. 6 N., R. 7 W.; Greene County, Indiana.

- Ap—0 to 11 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; weak medium subangular blocky structure; friable; slightly acid; abrupt smooth boundary.
- A—11 to 15 inches; black (10YR 2/1) silty clay, dark gray (10YR 4/1) dry; moderate medium angular blocky structure; firm; neutral; clear wavy boundary.
- Bg1—15 to 24 inches; dark gray (10YR 4/1) silty clay; weak coarse prismatic structure parting to moderate coarse angular blocky; firm; common faint continuous dark gray (10YR 4/1) pressure faces on peds; common fine distinct brown (10YR 5/3) masses that have accumulated iron and are in the matrix; common fine black (10YR 2/1) iron-manganese concretions; krotovinas of dark gray (10YR 4/1) silty clay, 1 to 2 inches in diameter and 8 to 12 inches apart, extend vertically throughout; neutral; gradual irregular boundary.
- Bg2—24 to 29 inches; grayish brown (2.5Y 5/2) silty clay; weak coarse prismatic structure parting to moderate medium and coarse angular blocky; firm; common distinct continuous gray (10YR 5/1) pressure faces on peds; common fine distinct yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; common fine black (10YR 2/1) iron-manganese concretions; krotovinas of gray (10YR 5/1) silty

clay, 1 to 2 inches in diameter and 8 to 12 inches apart, extend vertically throughout; slightly effervescent; slightly alkaline; gradual smooth boundary.

Bg3—29 to 38 inches; gray (10YR 6/1) silty clay loam; weak coarse prismatic structure parting to weak coarse angular blocky; firm; few distinct discontinuous gray (10YR 5/1) pressure faces on pedis; many fine distinct yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; common fine black (10YR 2/1) iron-manganese concretions; few fine calcium carbonate nodules; krotovinas of gray (10YR 5/1) silty clay, 1 to 2 inches in diameter and 8 to 12 inches apart, extend vertically throughout; strongly effervescent; moderately alkaline; gradual smooth boundary.

BCg—38 to 48 inches; gray (10YR 6/1) silty clay loam; weak coarse prismatic structure parting to weak coarse angular blocky; firm; few distinct discontinuous gray (10YR 5/1) pressure faces on pedis; many medium distinct yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; many fine calcium carbonate nodules; krotovinas of gray (10YR 5/1) silty clay, 1 to 2 inches in diameter and 8 to 12 inches apart, extend vertically throughout; strongly effervescent; moderately alkaline; gradual smooth boundary.

Cg—48 to 60 inches; gray (10YR 5/1) silty clay loam; weak medium and coarse angular blocky structure (geogenic); firm; many medium distinct yellowish brown (10YR 5/8) masses that have accumulated iron and are in the matrix; many fine calcium carbonate nodules; krotovinas of gray (10YR 5/1) silty clay, 1 to 2 inches in diameter and 8 to 12 inches apart, extend vertically throughout; strongly effervescent; moderately alkaline.

Series Range in Characteristics

Depth to the base of the cambic horizon: 30 to 60 inches

A or Ap horizon:

Color—hue of 10YR, value of 2 or 3, and chroma of 1 or 2

Texture—silty clay loam or silty clay
pH range—6.1 to 7.3

Bg1 horizon:

Color—hue of 10YR, 2.5Y, or 5Y; value of 4 to 6; and chroma of 1 or 2

Texture—silty clay
pH range—6.1 to 7.8

Bg2, Bg3, Bw, BCg, or BC horizon:

Color—hue of 10YR, 2.5Y, or 5Y; value of 4 to 6; and chroma of 1 to 6

Texture—silty clay or silty clay loam
pH range—7.4 to 8.4

Cg or C horizon:

Color—hue of 10YR, 2.5Y, or 5Y; value of 4 to 6; and chroma of 1 to 4

Texture—stratified silty clay or silty clay loam; thin strata of silt loam in some pedons
pH range—7.4 to 8.4

Moundhaven Series

Taxonomic classification: Sandy, mixed, mesic Typic Udifluvents

Typical Pedon for the Series

Moundhaven sandy loam, on a convex, south-facing slope of 1 percent, in a cultivated field; 510 feet north and 2,200 feet west of the southeast corner of sec. 19, T. 8 N., R. 1 W.; Franklin County, Indiana.

Ap—0 to 14 inches; brown (10YR 4/3) sandy loam, pale brown (10YR 6/3) dry; weak medium granular structure; friable; many fine roots; strongly effervescent; slightly alkaline; abrupt wavy boundary.

C1—14 to 19 inches; dark yellowish brown (10YR 4/4) loamy sand; weak medium granular structure; very friable; many fine roots; strongly effervescent; moderately alkaline; abrupt wavy boundary.

C2—19 to 26 inches; stratified yellowish brown (10YR 5/6) sand and brown (10YR 4/3) sandy loam, 80 percent sand strata; weak medium granular structure in sandy loam and single grain in sand; friable in sandy loam and loose in sand; many fine roots; strongly effervescent; moderately alkaline; abrupt smooth boundary.

C3—26 to 32 inches; yellowish brown (10YR 5/4) sand; single grain; loose; common fine roots; strongly effervescent; moderately alkaline; abrupt wavy boundary.

C4—32 to 35 inches; dark brown (10YR 3/3) silt loam; weak medium granular structure; friable; few fine roots; strongly effervescent; moderately alkaline; abrupt wavy boundary.

C5—35 to 38 inches; dark yellowish brown (10YR 4/4) loamy sand; weak medium granular structure; friable; strongly effervescent; moderately alkaline; clear smooth boundary.

C6—38 to 60 inches; light yellowish brown (10YR 6/4) sand; single grain; loose; strongly effervescent; moderately alkaline.

Series Range in Characteristics

pH range in the control section: 7.4 to 8.4

Content of carbonates: In all horizons

A horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4

Texture—loamy fine sand

C horizon:

Color—hue of 10YR, value of 3 to 5, and chroma of 3 to 6

Texture—loamy fine sand, loamy sand, or sand; strata of fine sandy loam, sandy loam, or silt loam between depths of 10 to 40 inches

Nawakwa Series

Taxonomic classification: Fine-loamy, mixed, active, nonacid, mesic Typic Udorthents

Typical Pedon for the Series

Nawakwa silt loam, on an undulating 3 percent slope, in a field of hay; 2,000 feet west and 225 feet north of the southeast corner of sec. 11, T. 10 N., R. 6 W.; Owen County, Indiana.

Ap—0 to 2 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; many fine roots; 3 percent pebbles; neutral; abrupt smooth boundary.

A/C—2 to 5 inches; 70 percent yellowish brown (10YR 5/6) and 30 percent dark yellowish brown (10YR 4/6) silt loam; massive; firm; 1/4- to 1/2-inch thick platy clods that part to moderate fine and medium angular blocky clods; many fine roots between clods; 2 percent pebbles and channers; slightly acid; clear smooth boundary.

Cd—5 to 11 inches; 85 percent yellowish brown (10YR 5/6) loam and 15 percent dark gray (10YR 4/1) silty clay loam; massive; very firm; 1/4- to 1-inch thick platy clods with horizontal cleavage planes and vertical cracks that are 1 to 3 inches apart; common flat roots between clods; 3 percent channers and pebbles; slightly acid; clear smooth boundary.

2C—11 to 80 inches; 90 percent dark gray (10YR 4/1) very parachannery silt loam and 10 percent yellowish brown (10YR 5/6) silty clay and clay loam material; massive; firm; 50 percent parachanners (shale); 5 percent shale, sandstone,

and siltstone rock fragments; moderately acid to moderately alkaline.

Series Range in Characteristics

Thickness of the soil material that overlies the graded spoil: 5 to 20 inches

Kind of rock fragments: Dominantly chert and very strongly cemented or indurated sandstone, siltstone, or shale

Other features: Individual layers within the soil are variable in thickness and composition; soils were graded with dozers and earth-moving pans.

Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6

Texture—silt loam

Content of rock fragments—0 to 3 percent pebbles and channers

pH range—5.6 to 7.3

A/C or C/A horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 1 to 8

Texture—silt loam, silty clay loam, loam, or clay loam

Content of rock fragments—1 to 5 percent pebbles and channers

pH range—5.6 to 7.3

Cd horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 1 to 8

Texture—silt loam, silty clay loam, loam, or clay loam

Content of rock fragments—1 to 5 percent pebbles and channers

pH range—5.6 to 7.3

2C horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 1 to 8

Texture—parachannery or very parachannery silty clay loam or silt loam; strata or pockets of silty clay, loam, or clay loam

Content of rock fragments—2 to 15 percent pebbles and channers

Content of pararock fragments—20 to 60 percent
pH range—5.6 to 8.4

Newark Series

Taxonomic classification: Fine-silty, mixed, active, nonacid, mesic Aeric Fluvaquents

Taxadjunct features: The Newark silt loam in this survey area has a cambic horizon. This difference,

however, does not affect the usefulness or behavior of the soils.

Typical Pedon for the MLRA

Newark silt loam, in a nearly level area in a cultivated field; 300 feet south and 2,500 feet west of the northeast corner of sec. 34, T. 9 N., R. 4 W.; Owen County, Indiana.

Ap1—0 to 8 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; common very fine roots; many very fine interstitial pores; moderately acid; abrupt smooth boundary.

Ap2—8 to 11 inches; brown (10YR 4/3) silt loam; moderate medium granular structure; friable; common very fine roots; common very fine interstitial and tubular pores; few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; slightly acid; abrupt smooth boundary.

Bg—11 to 24 inches; grayish brown (10YR 5/2) silt loam; weak fine subangular blocky structure; friable; few very fine roots; common very fine tubular pores; common fine faint light brownish gray (10YR 6/2) iron depletions and few fine distinct dark yellowish brown (10YR 4/6) masses that have accumulated iron and are in the matrix; slightly acid; clear wavy boundary.

Bw—24 to 32 inches; pale brown (10YR 6/3) silt loam; weak medium subangular blocky structure; friable; few very fine roots; few very fine tubular pores; many fine distinct light brownish gray (2.5Y 6/2) iron depletions and common fine prominent yellowish brown (10YR 5/8) masses that have accumulated iron and are in the matrix; neutral; gradual wavy boundary.

Cg—32 to 42 inches; light brownish gray (10YR 6/2) silt loam; massive; friable; few very fine tubular pores; many fine distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few fine weakly cemented iron and manganese concretions; neutral; gradual wavy boundary.

C—42 to 54 inches; yellowish brown (10YR 5/6) silt loam; massive; friable; common fine distinct light brownish gray (10YR 6/2) iron depletions and distinct dark brown (7.5YR 3/4) masses that have accumulated iron and are in the matrix; few fine rounded weakly cemented iron and manganese concretions; neutral; gradual wavy boundary.

C'g—54 to 66 inches; light brownish gray (10YR 6/2) silt loam; massive; friable; many fine prominent yellowish brown (10YR 5/8) and common fine prominent dark brown (7.5YR 3/4) masses that have accumulated iron and are in the matrix;

common fine rounded weakly cemented iron and manganese concretions; neutral.

MLRA Range in Characteristics

Thickness of the solum: 20 to 50 inches

A or Ap horizon:

Color—hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4 (A); hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4 (Ap)

Texture—silt loam

pH range—5.6 to 7.3

Bw or Bg horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 1 to 4

Texture—silt loam or silty clay loam

pH range—5.6 to 7.8

C or Cg horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 1 to 6

Texture—silt loam or silty clay loam; thin strata of loam or fine sandy loam below a depth of 40 inches

pH range—5.6 to 7.8

Oldenburg Series

Taxonomic classification: Coarse-loamy, mixed, active, mesic Fluvaquentic Eutrudepts

Typical Pedon for the Series

Oldenburg silt loam, on a slope of 1 percent, in a cultivated field; 800 feet west and 1,800 feet south of the northeast corner of sec. 13, T. 10 N., R. 11 E.; Franklin County, Indiana.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; many fine roots; neutral; abrupt smooth boundary.

Bw1—9 to 17 inches; brown (10YR 4/3) loam; weak fine subangular blocky structure; friable; many fine roots; common distinct continuous dark brown (10YR 3/3) organic coatings on faces of peds; neutral; clear wavy boundary.

Bw2—17 to 25 inches; brown (10YR 4/3) loam; weak fine subangular blocky structure; friable; common fine roots; common continuous dark brown (10YR 4/3) organic coatings on faces of peds; common fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; neutral; clear wavy boundary.

Bw3—25 to 39 inches; brown (10YR 5/3) fine sandy loam; weak fine subangular blocky structure;

friable; common fine roots; few discontinuous brown (10YR 4/3) organic coatings on faces of peds; common fine faint grayish brown (10YR 5/2) iron depletions in the matrix; neutral; gradual wavy boundary.

- C1—39 to 46 inches; brown (10YR 5/3) fine sandy loam; massive; friable; few fine roots; few fine faint light brownish gray (10YR 6/2) and grayish brown (10YR 5/2) iron depletions in the matrix; neutral; clear wavy boundary.
- C2—46 to 53 inches; brown (10YR 5/3) loamy sand; massive; very friable; common fine faint grayish brown (10YR 5/2) iron depletions in the matrix; 1 percent pebbles; neutral; clear wavy boundary.
- C3—53 to 60 inches; brown (10YR 5/3) fine sandy loam; massive; friable; common fine faint grayish brown (10YR 5/2) iron depletions in the matrix; 1 percent pebbles; neutral.

Series Range in Characteristics

Depth to the base of the cambic horizon: 22 to 44 inches

A or Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3
 Texture—silt loam, loam, or fine sandy loam
 Content of rock fragments—0 to 10 percent pebbles
 pH range—5.1 to 7.3

Bw horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 3 or 4
 Texture—silt loam, loam, fine sandy loam, or sandy loam; 1- to 3-inch layers of loamy sand or loamy fine sand in some pedons
 Content of rock fragments—0 to 10 percent pebbles
 pH range—5.1 to 7.3; 5.6 or above in one or more horizon

C or Cg horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 1 to 4
 Texture—fine sandy loam, sandy loam, or loam; strata of sandy clay loam, loamy sand, gravelly loamy sand, or loamy fine sand
 Content of rock fragments—0 to 14 percent pebbles
 pH range—5.6 to 7.3

Olephant Series

Taxonomic classification: Fine-silty, mixed, active, mesic Ultic Hapludalfs

Typical Pedon for the Series

Olephant silt loam, on a slope of 2 percent, in a cultivated field; 1,850 feet south and 2,600 feet east of the northwest corner of sec. 33, T. 12 N., R. 3 W.; Owen County, Indiana.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; common very fine roots; many very fine and fine interstitial pores; slightly acid; abrupt smooth boundary.

BE—8 to 14 inches; brown (10YR 5/3) silt loam; weak very fine subangular blocky structure; friable; few very fine roots; common very fine and fine tubular pores; slightly acid; clear wavy boundary.

Bt1—14 to 25 inches; yellowish brown (10YR 5/4) silty clay loam; weak very fine and fine subangular blocky structure; friable; few very fine roots; few very fine tubular pores; common faint discontinuous dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; slightly acid; clear wavy boundary.

Bt2—25 to 30 inches; yellowish brown (10YR 5/6) silty clay loam; weak fine and medium subangular blocky structure; friable; few very fine tubular pores; many faint continuous dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; moderately acid; clear wavy boundary.

Bt3—30 to 37 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; few very fine tubular pores; many distinct continuous brown (10YR 4/3) clay films on faces of peds and in pores; very strongly acid; clear wavy boundary.

Bt4—37 to 48 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium subangular blocky structure; firm; few very fine tubular pores; common distinct discontinuous brown (10YR 4/3) clay films on faces of peds and in pores; common fine distinct pale brown (10YR 6/3) iron depletions in the matrix; very strongly acid; gradual wavy boundary.

Bt5—48 to 55 inches; yellowish brown (10YR 5/6) silt loam; moderate medium and coarse subangular blocky structure; firm; few very fine tubular pores; common distinct discontinuous dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; many distinct continuous light brownish gray (10YR 6/2) clay depletions on vertical faces of peds; few fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; few fine faint brownish yellow (10YR 6/8) masses that have accumulated iron and are in the matrix; few fine



Figure 18.—Typical profile of Holton soil in a map unit of Holton silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration. This flood plain soil formed in loamy alluvium that was transported from the surrounding dissected loess-covered till and outwash plains.

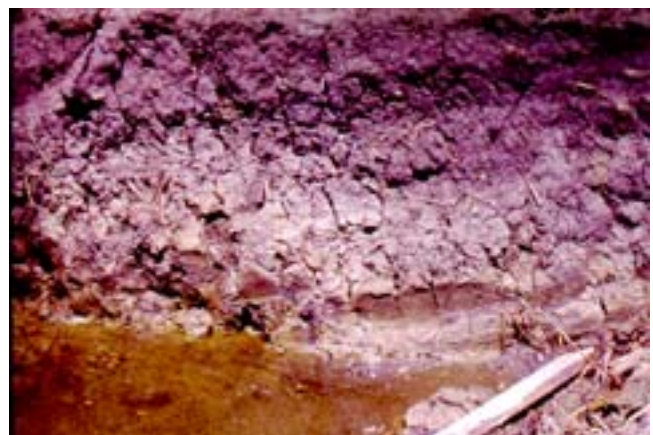


Figure 19.—Typical profile of Montgomery silty clay loam, 0 to 1 percent slopes. This very poorly drained, clayey soil formed in fine-textured lacustrine sediments. The dark surface layer is a result of the incorporation of organic residue from wetland grasses and sedges that grew on this soil before it was drained and used for crop production.



Figure 20.—Typical profile of Parke silt loam, 6 to 12 percent slopes, eroded. The upper 2 feet of the soil formed in loess, and the lower part (reddish colored) is a paleosol formed in loamy outwash sediments.



Figure 21.—Typical profile of Pike silt loam, 2 to 6 percent slopes, eroded. The upper 4 feet (120 centimeters on the tape) of the soil formed in loess, and the lower part (reddish colored) is a paleosol formed in loamy outwash sediments.

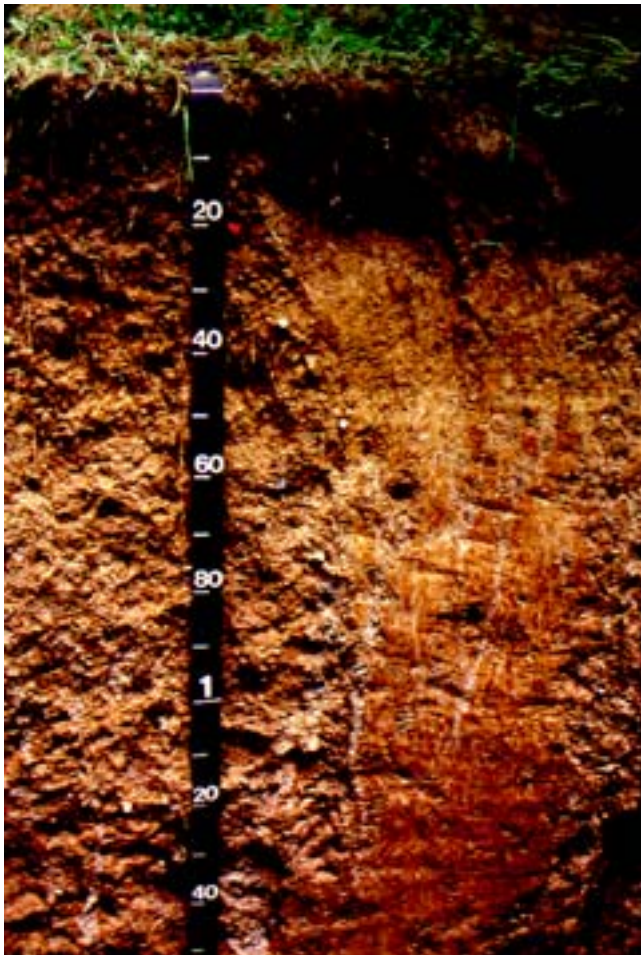


Figure 22.—Typical profile of Potawatomi silt loam, 1 to 3 percent slopes. The upper 4 feet (120 centimeters on the tape) of the soil formed in loess, and the lower part is a paleosol formed in residuum derived from interbedded sandstone, siltstone, and shale. The top of the fragipan is at about 2½ feet (80 centimeters on the tape, where gray streaks are oriented vertically).



Figure 23.—Typical profile of Stinesville silt loam, 6 to 12 percent slopes, eroded. The upper 5 feet (160 centimeters on the tape) of the soil formed in loess, the lower part (reddish colored) is a paleosol formed in till. Below the till is residuum derived from limestone. The colored markers indicate the boundary breaks between horizons.



Figure 24.—Typical profile of Vigo silt loam, 0 to 2 percent slopes. The upper 5 feet of the soil formed in loess. The parent material of the lower part of the soil is a paleosol that formed in till.

iron and manganese concretions; very strongly acid; gradual wavy boundary.

Bt6—55 to 64 inches; yellowish brown (10YR 5/6) silt loam; weak coarse subangular blocky structure; firm; few very fine tubular pores; common distinct discontinuous light brownish gray (2.5Y 6/2) clay depletions on vertical faces of peds; few distinct patchy light brownish gray (10YR 6/2) clay films on vertical and horizontal faces of peds; common fine faint brownish yellow (10YR 6/8) masses that have accumulated iron and are in the matrix; few fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; few fine iron and manganese concretions; very strongly acid; clear wavy boundary.

2Btb—64 to 80 inches; yellowish brown (10YR 5/4) clay loam; moderate coarse subangular blocky structure; very firm; common distinct discontinuous light brownish gray (2.5Y 6/2) clay depletions on vertical faces of peds; common faint discontinuous dark yellowish brown (10YR 4/4) clay films on vertical and horizontal faces of peds; common fine faint yellowish brown (10YR 5/8) masses that have accumulated iron and are in the matrix; few fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; few fine rounded iron and manganese concretions; very strongly acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: More than 80 inches

Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3

Texture—silt loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

Bt or BE horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6

Texture—silt loam or silty clay loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas in the upper part

2Btb horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 1 to 8

Texture—clay loam, loam, or silty clay loam

Content of rock fragments—0 to 3 percent pebbles

pH range—4.5 to 6.0

Otwell Series

Taxonomic classification: Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs

Taxadjunct features: The Otwell soils in this survey area do not have a subhorizon with a fragipan that has vertical streaks that have a mean horizontal dimension of 4 inches or more. This difference, however, does not affect the usefulness or behavior of the soils.

Typical Pedon for the Series

Otwell silt loam, on a convex slope of 5 percent, in a cultivated field; 1,605 feet south and 740 feet east of the northwest corner of sec. 25, T. 8 N., R. 4 E.; Bartholomew County, Indiana.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; slightly acid; abrupt smooth boundary.

Bt1—8 to 11 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable; few faint patchy yellowish brown (10YR 5/4) clay films on faces of some peds; common discontinuous silt coatings on faces of peds; common very fine pores throughout peds; strongly acid; clear smooth boundary.

Bt2—11 to 23 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; common faint continuous dark yellowish brown (10YR 4/4) clay films on faces of peds; common distinct light brownish gray (10YR 6/2) clay depletions on faces of peds; very fine pores throughout peds; very strongly acid; clear wavy boundary.

2Btx1—23 to 27 inches; yellowish brown (10YR 5/6) silty clay loam; moderate very coarse prismatic structure parting to weak medium platy; very firm; many distinct continuous brown (10YR 4/3) clay films on faces of peds; few distinct discontinuous light gray (10YR 7/2) clay depletions on vertical and horizontal faces of prisms; very fine pores throughout peds; common sand grains and a few very fine pebbles; few fine somewhat flattened roots extending into clay-filled cracks between prisms; many medium distinct brown (10YR 5/3) and strong brown (7.5YR 5/6) masses in which iron has accumulated in the matrix and many medium distinct light brownish gray (10YR 6/2) iron depletions are in the matrix; few black (10YR 2/1) iron and manganese concretions; brittle; very strongly acid; clear wavy boundary.

2Btx2—27 to 48 inches; yellowish brown (10YR 5/6) loam; moderate to strong very coarse prismatic structure parting into weak thick platy; very firm; many distinct continuous brown (10YR 5/3) clay films on faces of peds and as linings in pores; common distinct discontinuous white (10YR 8/2) clay depletions on vertical faces of peds; very fine pores throughout peds; few fine platelike black (10YR 2/1) iron and manganese stains; many medium distinct brown (10YR 5/3) and brownish yellow (10YR 6/6) masses in which iron has accumulated in the matrix and many medium distinct light brownish gray (10YR 6/2) iron depletions are in the matrix; brittle; very strongly acid; clear smooth boundary.

2C—48 to 80 inches; yellowish brown (10YR 5/4 and 5/6) and light brownish gray (10YR 6/2) stratified silt loam and silty clay loam with thin strata of silty clay; massive; firm; gray (10YR 6/1) clay filled vertical cracks; strongly acid at a depth of 60 inches and slightly acid at a depth of 80 inches.

Series Range in Characteristics

Depth to a fragipan: 20 to 36 inches; ranges to a depth of 12 inches in severely eroded pedons

Ap horizon:

Color—hue of 10YR, 7.5YR, or 2.5Y; value of 4 or 5; and chroma of 2 to 6

Texture—silt loam

pH range—4.5 to 7.3; depends upon liming history

Bt horizon:

Color—hue of 10YR, 2.5Y, or 7.5YR; value of 4 to 6; and chroma of 3 to 8; chroma of 1 or 2 in the lower part

Texture—silt loam or silty clay loam

pH range—4.5 to 5.5

2Btx horizon:

Color—hue of 10YR, 2.5Y, or 7.5YR; value of 4 to 7; and chroma of 2 to 8

Texture—silt loam, silty clay loam, loam, or clay loam

Content of rock fragments—0 to 5 percent pebbles
pH range—4.5 to 5.5

2C, 2BC, or 2Btb horizon:

Color—hue of 10YR, 2.5Y, or 7.5YR; value of 4 to 7; and chroma of 2 to 8

Texture—stratified layers of silt loam, silty clay loam, sandy loam, sandy clay loam, or clay loam; minor strata of silty clay or fine sand

Content of rock fragments—0 to 15 percent pebbles

pH range—5.1 to 7.3

Parke Series

Taxonomic classification: Fine-silty, mixed, active, mesic Ultic Hapludalfs

Typical Pedon for the Series

Parke silt loam, on a convex, north-facing slope, in a cultivated field (fig. 20); 1,900 feet west and 1,500 feet north of the southeast corner of sec. 34, T. 11 N., R. 3 W.; Owen County, Indiana.

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) silt loam, light yellowish brown (10YR 6/4) dry; moderate medium granular structure; friable; many very fine and fine roots; common very fine and fine interstitial and tubular pores; strongly acid; abrupt smooth boundary.

Bt1—6 to 11 inches; brown (7.5YR 5/4) silt loam; weak fine subangular blocky structure; friable; common very fine and fine roots; common very fine and fine interstitial and tubular pores; common distinct discontinuous brown (7.5YR 4/4) clay films on faces of peds and in pores; very strongly acid; clear wavy boundary.

Bt2—11 to 17 inches; brown (7.5YR 5/4) silty clay loam; fine and medium subangular blocky structure; firm; few very fine and fine roots; few very fine and fine vesicular and tubular pores; common distinct continuous brown (7.5YR 4/4) clay films on faces of peds and in pores; few discontinuous pale brown (10YR 6/3) silt coatings on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—17 to 26 inches; brown (7.5YR 5/4) silt loam; moderate medium subangular blocky structure; firm; few very fine and fine roots; few very fine and fine vesicular and tubular pores; common distinct continuous brown (7.5YR 4/4) clay films on faces of peds and in pores; few discontinuous pale brown (10YR 6/3) silt coatings on faces of peds; very strongly acid; clear wavy boundary.

2Bt4—26 to 35 inches; brown (7.5YR 5/4) silt loam; moderate medium and coarse subangular blocky structure; friable; few very fine and fine roots; few very fine and fine vesicular and tubular pores; common distinct discontinuous brown (7.5YR 4/4) clay films on faces of peds and in pores; few pale brown (10YR 6/3) silt coatings on faces of peds; 1 percent pebbles; very strongly acid; clear wavy boundary.

3Btb1—35 to 41 inches; brown (7.5YR 5/4) fine sandy loam; weak coarse subangular blocky structure; friable; few very fine and fine vesicular and tubular pores; common distinct discontinuous brown (7.5YR 4/4) clay films on faces of peds and in

pores; 1 percent pebbles; very strongly acid; gradual wavy boundary.

3Btb2—41 to 56 inches; brown (7.5YR 5/4) fine sandy loam; weak coarse subangular blocky structure; friable; few very fine and fine vesicular and tubular pores; few distinct patchy brown (7.5YR 4/4) clay films on faces of peds and in pores; 1 percent pebbles; very strongly acid; gradual wavy boundary.

3Btb3—56 to 65 inches; brown (7.5YR 5/4) fine sandy loam; weak very coarse subangular blocky structure; friable; common very fine and fine interstitial and tubular pores; common distinct continuous brown (7.5YR 4/4) clay bridging sand grains; 2 percent pebbles; very strongly acid; gradual wavy boundary.

3Btb4—65 to 80 inches; yellowish red (5YR 4/6) sandy clay loam; weak very coarse subangular blocky structure; friable; common very fine and fine interstitial and tubular pores; common distinct continuous reddish brown (5YR 4/4) clay bridging sand grains; few discontinuous light yellowish brown (10YR 6/4) skeletons on vertical faces of peds; 1 percent pebbles; very strongly acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: 80 to more than 100 inches

A or Ap horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2 or 3 (A); hue of 10YR, value of 4 or 5, and chroma of 3 to 6 (Ap)

Texture—silt loam

pH range—5.1 to 6.5 in nonlimed areas; ranges to 7.3 in limed areas

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6

Texture—silty clay loam or silt loam

pH range—4.5 to 6.0

2Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6

Texture—silt loam

pH range—4.5 to 6.0

3Btb horizon:

Color—hue of 7.5YR, 5YR, or 2.5YR; value of 3 to 5; and chroma of 3 to 6; hue of 5YR or redder is present in some pedons

Texture—sandy clay loam, loam, sandy loam, or fine sandy loam

Content of rock fragments—0 to 10 percent pebbles
pH range—4.5 to 5.5

Patrickburg Series

Taxonomic classification: Fine-silty, mixed, active, mesic Aeric Fragiaqualfs

Typical Pedon for the Series

Patrickburg silt loam, on a slope of 1 percent, in a cultivated field; 100 feet east and 800 feet north of the southwest corner of sec. 4, T. 9 N., R. 4 W., Owen County, Indiana.

Ap—0 to 8 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; weak fine and medium granular structure; friable; many very fine and fine roots; many fine and very fine interstitial and tubular pores; neutral; abrupt smooth boundary.

E—8 to 11 inches; pale brown (10YR 6/3) silt loam; weak medium platy structure; friable; common very fine and fine roots; common fine and very fine interstitial and tubular pores; many fine faint light brownish gray (10YR 6/2) iron depletions in the matrix; many fine distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine rounded iron and manganese concretions; strongly acid; clear wavy boundary.

Bt—11 to 18 inches; pale brown (10YR 6/3) silt loam; weak fine subangular blocky structure; friable; common very fine and fine roots; common fine and very fine tubular pores; common distinct discontinuous grayish brown (10YR 5/2) clay films on vertical and horizontal faces of peds; many fine faint light brownish gray (10YR 6/2) iron depletions in the matrix; common fine distinct yellowish brown (10YR 5/8) masses that have accumulated iron and are in the matrix; many distinct continuous light brownish gray (10YR 6/2) clay depletions on vertical faces of peds; common fine and medium rounded iron and manganese concretions; very strongly acid; gradual wavy boundary.

Btg—18 to 25 inches; light brownish gray (10YR 6/2) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine and fine roots between peds; common very fine tubular pores; many distinct continuous grayish brown (10YR 5/2) clay films on vertical and horizontal faces of peds; many fine distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; many distinct continuous light brownish gray (10YR 6/2)

clay depletions on vertical faces of peds; common fine and medium rounded iron and manganese concretions; very strongly acid; abrupt irregular boundary.

Btgx1—25 to 35 inches; light brownish gray (10YR 6/2) silty clay loam; moderate coarse prismatic structure; very firm; few very fine and fine roots between peds; common fine and very fine tubular pores; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds; common fine distinct strong brown (7.5YR 5/8) masses that have accumulated iron and are in the matrix; many distinct continuous light gray (10YR 7/2) clay depletions on vertical faces of peds; common fine rounded iron and manganese oxide concretions; 50 percent brittle; very strongly acid; gradual wavy boundary.

Btgx2—35 to 46 inches; light brownish gray (10YR 6/2) silty clay loam; strong very coarse prismatic structure; very firm; few very fine and fine roots between peds; common fine and very fine tubular and interstitial pores; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds; many distinct continuous light gray (10YR 7/2) clay depletions on faces of peds; many medium prominent strong brown (7.5YR 5/8) masses that have accumulated iron and are in the matrix; common fine rounded iron and manganese concretions; 2 percent sandstone channers; 65 percent brittle; very strongly acid; gradual wavy boundary.

Btx—46 to 55 inches; yellowish brown (10YR 5/6) silt loam; moderate very coarse prismatic structure; very firm; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds; many medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; many continuous distinct light gray (10YR 7/2) clay depletions on faces of peds; common fine and medium rounded iron and manganese concretions; 2 percent sandstone channers; 70 percent brittle; strongly acid; gradual wavy boundary.

2Bt1—55 to 66 inches; yellowish brown (10YR 5/4) silt loam; weak coarse subangular blocky structure; friable; common distinct discontinuous dark yellowish brown (10YR 4/6) clay films on vertical and horizontal faces of peds; many medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine distinct strong brown (7.5YR 5/8) masses that have accumulated iron and are in the matrix; common distinct discontinuous light brownish gray (10YR 6/2) clay depletions on vertical faces of peds; common fine and medium rounded iron and

manganese concretions; 5 percent sandstone channers; strongly acid; gradual wavy boundary.

2Bt2—66 to 76 inches; yellowish brown (10YR 5/6) silt loam; weak coarse subangular blocky structure; firm; common distinct discontinuous dark yellowish brown (10YR 4/6) clay films on faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine distinct strong brown (7.5YR 5/8) masses that have accumulated iron and are in the matrix; 5 percent sandstone channers; strongly acid; abrupt smooth boundary.

2Cr—76 to 80 inches; yellow (10YR 7/8) and light gray (2.5Y 7/2) interbedded weakly and moderately cemented siltstone with beds of very strongly cemented sandstone.

Series Range in Characteristics

Depth to the base of the argillic horizon: 60 to 80 inches

Depth to paralithic contact: 60 to 80 inches

Depth to a fragipan: 30 to 40 inches

Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3

Texture—silt loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

E or EB horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 2 to 4

Texture—silt loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas in the upper part

Bt or Btg horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 2 to 6

Texture—silt loam or silty clay loam

pH range—4.5 to 5.5

Btx or Btxg horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 8

Texture—silt loam or silty clay loam

pH range—4.5 to 5.5

2Bt horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 2 to 8

Texture—silt loam or loam or the channery analogs of these textures; sandy loam or clay loam or the channery analogs of these textures in some pedons

Content of rock fragments—2 to 20 percent
channers
pH range—4.5 to 5.5

2Cr horizon:

Color—hue of 2.5Y, 10YR, or 7.5YR; value of 5 to 7; and chroma of 2 to 8

Pekin Series

Taxonomic classification: Fine-silty, mixed, active, mesic Aquic Fragiudults

Taxadjunct features: The Pekin soils in map unit Pekin silt loam, 0 to 2 percent slopes, rarely flooded, do not have a subhorizon with a fragipan that has vertical streaks that have a mean horizontal dimension of 4 inches or more. This difference, however, does not affect the usefulness or behavior of the soils.

Typical Pedon for the Series

Pekin silt loam, in a nearly level area in a cultivated field; 2,300 feet south and 1,400 feet west of the northeast corner of sec. 19, T. 1 S., R. 5 E.; Washington County, Indiana.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; many fine roots; neutral; abrupt smooth boundary.

Bt1—9 to 15 inches; light yellowish brown (10YR 6/4) silt loam; moderate medium subangular blocky structure; friable; many fine roots; many fine pores; common distinct discontinuous yellowish brown (10YR 5/4) clay films on faces of peds; neutral; clear smooth boundary.

Bt2—15 to 27 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; many fine roots; many fine pores; many distinct continuous dark yellowish brown (10YR 4/4) clay films on faces of peds; common medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; very strongly acid; clear smooth boundary.

Btx1—27 to 35 inches; yellowish brown (10YR 5/6) silty clay loam; moderate very coarse prismatic structure; firm; few fine roots; few fine pores; many distinct continuous brown (10YR 5/3) clay films on faces of peds; many medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; brittle; extremely acid; gradual wavy boundary.

Btx2—35 to 44 inches; yellowish brown (10YR 5/4) silt loam; moderate very coarse prismatic structure; firm; many prominent continuous gray (10YR 6/1)

clay films on faces of peds; many medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; brittle; extremely acid; gradual wavy boundary.

C—44 to 60 inches; yellowish brown (10YR 5/6) silt loam; massive; firm; many medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; very strongly acid.

Series Range in Characteristics

Thickness of the solum: 40 to 80 inches

Depth to a fragipan: 20 to 38 inches; ranges from 10 to 20 inches in severely eroded pedons

A or Ap horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 4

Texture—silt loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

Bt horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 3 to 6; redoximorphic depletions in some pedons

Texture—silt loam or silty clay loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas in the upper part

Btx or Btxg horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 2 to 8

Texture—silt loam or silty clay loam

Content of rock fragments—0 to 7 percent pebbles
pH range—3.5 to 5.5

C or Cg horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 2 to 6

Texture—silt loam, silty clay loam, loam, sandy loam, or fine sandy loam

Content of rock fragments—0 to 10 percent pebbles

pH range—4.5 to 5.5; ranges to 7.3 in the lower part

Peoga Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Fragic Epiaqualfs

Typical Pedon for the Series

Peoga silt loam, on a slope of 0.5 percent, in a cultivated field; 1,810 feet east and 645 feet north of the center of sec. 18, T. 4 N., R. 7 E., Scott County, Indiana.

Ap—0 to 8 inches; light brownish gray (10YR 6/2) silt loam, light gray (10YR 7/1) dry; weak coarse subangular blocky structure parting to moderate medium granular; friable; few very fine roots; many fine distinct brown (10YR 5/3) masses that have accumulated iron and are in the matrix; common prominent discontinuous yellowish red (5YR 5/6) pore linings; common prominent black (N 2.5/0) iron and manganese stains; krotovinas filled with brown (10YR 5/3) material; moderately acid; abrupt smooth boundary.

BEg—8 to 19 inches; light gray (10YR 7/2) silt loam; weak medium subangular blocky structure; friable; few very fine roots; common fine prominent reddish yellow (7.5YR 6/8) and common medium prominent brownish yellow (10YR 6/6) masses that have accumulated iron and are in the matrix; common prominent black (N 2.5/0) iron-manganese stains in pores and root channels; krotovinas filled with brown (10YR 5/3) material; very strongly acid; gradual wavy boundary.

Btg1—19 to 27 inches; light gray (10YR 7/2) silt loam; weak coarse prismatic structure parting to weak medium subangular blocky; friable; few very fine roots; common distinct discontinuous light brownish gray (10YR 6/2) clay films on vertical faces of peds; common fine prominent reddish yellow (7.5YR 6/8) and common medium prominent brownish yellow (10YR 6/6) masses that have accumulated iron and are in the matrix; common distinct prominent black (N 2.5/0) iron and manganese stains on vertical faces of peds; krotovinas filled with brown (10YR 5/3) material; very strongly acid; gradual wavy boundary.

Btg2—27 to 36 inches; light gray (10YR 7/2) silt loam; moderate coarse prismatic structure parting to moderate coarse subangular blocky; friable; few very fine roots between peds; many distinct continuous light brownish gray (10YR 6/2) clay films on vertical faces of peds; common fine prominent reddish yellow (7.5YR 6/8) and common medium prominent light yellowish brown (10YR 6/4) masses that have accumulated iron and are in the matrix; common prominent discontinuous black (N 2.5/0) iron and manganese stains on vertical faces of peds; krotovinas filled with brown (10YR 5/3) material; very strongly acid; gradual irregular boundary.

Btgx1—36 to 58 inches; 65 percent light gray (10YR 7/2) and 35 percent strong brown (7.5YR 5/6) silt loam; moderate coarse prismatic structure; firm; many distinct continuous light brownish gray (10YR 6/2) clay films on vertical faces of peds;

common medium distinct light yellowish brown (10YR 6/4) masses that have accumulated iron and are in the matrix; common prominent discontinuous black (N 2.5/0) iron and manganese stains on vertical faces of peds; 35 percent brittle; very strongly acid; gradual wavy boundary.

Btgx2—58 to 76 inches; 65 percent light gray (10YR 7/2) and 35 percent yellowish brown (10YR 5/6) silt loam; moderate coarse prismatic structure; firm; common prominent continuous light brownish gray (10YR 6/2) clay films on vertical faces of peds; 35 percent brittle; strongly acid; diffuse wavy boundary.

2Btb—76 to 80 inches; strong brown (7.5YR 5/6) silty clay loam; moderate coarse subangular blocky structure; firm; common distinct continuous light brownish gray (10YR 6/2) clay films on vertical and horizontal faces of peds; many medium prominent light gray (10YR 7/2) iron depletions; few fine prominent yellowish red (5YR 5/6) masses that have accumulated iron and are in the matrix; common coarse irregular iron and manganese concretions; strongly acid.

Series Range in Characteristics

Thickness of the solum: 60 to more than 80 inches

A or Ap horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 1 to 3

Texture—silt loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

Eg, EBg, or BEg horizon:

Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2

Texture—silt loam

Content of rock fragments—0 to 2 percent pebbles
pH range—3.5 to 5.5; ranges to 6.0 in the lower part

Btg, Bt, Btgx, or Btx horizon:

Color—hue of 7.5YR to 5Y, value of 5 to 7, and chroma of 1 to 6; horizons with chroma of 4 to 6 are below a depth of 36 inches

Texture—silt loam or silty clay loam; loam or clay loam in the lower part

2Btg or 2Btb horizon:

Color—hue of 10YR or 7.5YR, value of 5, and chroma of 1 to 6

Texture—silt loam, silty clay loam, loam, or clay loam

Content of rock fragments—0 to 2 percent pebbles
pH range—5.1 to 7.3

Piankeshaw Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Dystric Fluventic Eutrudepts

Typical Pedon for the Series

Piankeshaw silt loam, in a nearly level area in a field of hay; 2,530 feet west and 2,200 feet south of the northeast corner of sec. 23, T. 6 N., R. 4 W.; Greene County, Indiana.

- Ap—0 to 6 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; many fine roots; 12 percent channers; neutral; abrupt smooth boundary.
- Bw1—6 to 13 inches; dark yellowish brown (10YR 4/4) loam; weak medium subangular blocky structure parting to weak fine granular; friable; many fine roots; common distinct discontinuous dark brown (10YR 3/3) organic coatings on faces of peds; 14 percent channers; neutral; clear wavy boundary.
- Bw2—13 to 20 inches; dark yellowish brown (10YR 4/4) channery loam; weak coarse subangular blocky structure; friable; few distinct patchy dark brown (10YR 3/3) organic coatings on faces of peds; 25 percent channers; neutral; clear wavy boundary.
- Bw3—20 to 26 inches; dark yellowish brown (10YR 4/4) channery loam; weak coarse subangular blocky structure; friable; 20 percent channers; neutral; gradual wavy boundary.
- C1—26 to 48 inches; brown (10YR 5/3) channery loam; few fine distinct yellowish brown (10YR 5/6) mottles; massive; friable; few dark brown (7.5YR 4/2) iron and manganese concretions; 15 percent channers; neutral; gradual wavy boundary.
- C2—48 to 60 inches; brown (10YR 4/3) very channery loam; few fine faint brown (10YR 5/3) mottles; massive; friable; 50 percent channers; neutral.

Series Range in Characteristics

Depth to the base of the cambic horizon: 20 to 45 inches

Kind of rock fragments: Dominantly channers of sandstone and pebbles

A or Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4

Texture—silt loam

Content of rock fragments—5 to 14 percent

pH range—5.6 to 7.3

Bw horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6

Texture—loam or channery loam

Content of rock fragments—8 to 30 percent

pH range—5.6 to 7.3

C horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4

Texture—channery or very channery analogs of loam or sandy loam

Content of rock fragments—15 to 30 percent in the upper part; ranges to 60 percent in the lower part

pH range—5.6 to 7.3

Pike Series

Taxonomic classification: Fine-silty, mixed, active, mesic Ultic Hapludalfs

Typical Pedon for the Series

Pike silt loam, on a convex slope of 1 percent, in a cultivated field (fig. 21); 1,800 feet west and 1,000 feet north of the southeast corner of sec. 34, T. 11 N., R. 3 W.; Owen County, Indiana.

- Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; many very fine roots; many very fine interstitial pores; moderately acid; abrupt smooth boundary.
- Bt1—9 to 12 inches; dark yellowish brown (10YR 4/6) silt loam; moderate very fine subangular blocky structure; friable; many very fine roots; common very fine interstitial and tubular pores; common distinct continuous dark yellowish brown (10YR 4/4) clay films on faces of peds; strongly acid; abrupt wavy boundary.
- Bt2—12 to 21 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine subangular blocky structure; friable; many very fine roots; common very fine interstitial and tubular pores; many distinct continuous dark yellowish brown (10YR 4/6) clay films on faces of peds; strongly acid; gradual wavy boundary.
- Bt3—21 to 39 inches; yellowish brown (10YR 5/4) silt loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; common very fine vesicular and tubular pores; common distinct discontinuous pale brown (10YR 6/3) silt coatings on faces of peds; many distinct continuous dark yellowish brown (10YR 4/4) clay films on faces of peds; very strongly acid; gradual wavy boundary.
- 2Bt4—39 to 44 inches; yellowish brown (10YR 5/4) silt loam; weak medium prismatic structure parting to

moderate medium subangular blocky; friable; common distinct continuous pale brown (10YR 6/3) silt coatings on faces of peds; common distinct discontinuous brown (7.5YR 4/4) clay films on faces of peds; very strongly acid; gradual wavy boundary.

2Bt5—44 to 53 inches; dark yellowish brown (10YR 4/6) silt loam; weak coarse prismatic structure parting to weak coarse subangular blocky; friable; many very fine and fine vesicular and tubular pores; common distinct continuous pale brown (10YR 6/3) silt coatings on faces of peds; common distinct discontinuous strong brown (7.5YR 4/6) clay films on faces of peds and in pores; very strongly acid; clear wavy boundary.

3Btb1—53 to 63 inches; dark yellowish brown (10YR 4/6) loam; weak coarse prismatic structure; friable; common very fine and fine vesicular and tubular pores; very few distinct discontinuous dark yellowish brown (10YR 4/4) clay films in root channels and pores; very strongly acid; clear wavy boundary.

3Btb2—63 to 73 inches; yellowish red (5YR 4/6) sandy loam; weak medium and coarse subangular blocky structure; friable; common very fine and fine vesicular and tubular pores; common distinct discontinuous reddish brown (5YR 4/4) and light yellowish brown (10YR 6/4) clay films on faces of peds; common distinct continuous brown (7.5YR 4/4) clay films on faces of peds and in pores; few fine iron and manganese concretions; very strongly acid; clear wavy boundary.

3Btb3—73 to 80 inches; yellowish red (5YR 4/6) sandy clay loam; weak coarse subangular blocky structure; friable; common fine and very fine vesicular and tubular pores; few prominent discontinuous red (2.5YR 4/6) and common prominent discontinuous light yellowish brown (10YR 6/4) clay films on faces of peds; few distinct discontinuous brown (7.5YR 4/4) clay films on faces of peds and in pores; few fine iron and manganese concretions; 1 percent rounded gravel; very strongly acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: More than 80 inches

A or Ap horizon:

Color—hue of 10YR, value of 4, and chroma of 3 or 4

Texture—silt loam or silty clay loam

pH range—4.5 to 5.0 in nonlimed areas; ranges to 7.3 in limed areas

Bt horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 4 to 6

Texture—silt loam or silty clay loam

pH range—4.5 to 5.5

2Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6

Texture—silt loam

pH range—4.5 to 5.5

3Btb horizon:

Color—hue of 7.5YR, 10YR, 5YR, or 2.5YR; value of 4 or 5; and chroma of 4 to 6; hue of 5YR or redder in some pedons

Texture—sandy clay loam, sandy loam, or loam or the gravelly analogs of these textures

Content of rock fragments—0 to 25 percent pebbles

pH range—4.5 to 5.5

Pope Series

Taxonomic classification: Coarse-loamy, mixed, active, mesic Fluventic Dystrudepts

Typical Pedon for the MLRA

Pope fine sandy loam, in a nearly level area in a cultivated field; 1,550 feet west and 1,175 feet north of the southeast corner of sec. 19, T. 9 N., R. 4 W.; Owen County, Indiana.

Ap—0 to 8 inches; brown (10YR 4/3) fine sandy loam, pale brown (10YR 6/3) dry; weak fine granular structure; very friable; common very fine roots; many very fine interstitial pores; slightly acid; abrupt smooth boundary.

Bw1—8 to 15 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine subangular blocky structure; very friable; common very fine roots; common very fine tubular pores; few faint discontinuous dark yellowish brown (10YR 4/4) organic coatings on vertical and horizontal faces of peds; very strongly acid; gradual wavy boundary.

Bw2—15 to 32 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium subangular blocky structure; very friable; few very fine roots; common very fine tubular pores; very few faint discontinuous dark yellowish brown (10YR 4/4) organic coatings on vertical and horizontal faces of peds; very strongly acid; gradual wavy boundary.

C1—32 to 45 inches; light yellowish brown (10YR 6/4) stratified fine sandy loam and loamy fine sand;

massive; very friable; few very fine tubular pores; very strongly acid; gradual wavy boundary.
 C2—45 to 60 inches; light yellowish brown (10YR 6/4) stratified loamy fine sand and fine sandy loam; massive; very friable; strongly acid.

MLRA Range in Characteristics

Thickness of the solum: 30 to 60 inches

Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
 Texture—fine sandy loam or sandy loam
 pH range—4.5 to 7.3

Bw horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 6
 Texture—very fine sandy loam, fine sandy loam, or sandy loam
 pH range—4.5 to 5.5

C horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 6
 Texture—loamy fine sand, loamy sand, fine sandy loam, or sandy loam or these textures stratified
 Content of rock fragments—0 to 2 percent pebbles
 pH range—4.5 to 5.5

Potawatomi Series

Taxonomic classification: Fine-silty, mixed, active, mesic Fragiatic Hapludalfs

Typical Pedon for the Series

Potawatomi silt loam, on a convex, north-facing slope of 2 percent, in a pasture field (fig. 22); 300 feet west and 1,000 feet south of the northeast corner of sec. 1, T. 10 N., R. 5 W., Owen County, Indiana.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; many very fine and fine roots; many very fine and fine interstitial pores; moderately acid; clear smooth boundary.

Bt1—9 to 14 inches; yellowish brown (10YR 5/4) silty clay loam; weak very fine subangular blocky structure; friable; many very fine and fine roots; common very fine and fine vesicular and tubular pores; few distinct discontinuous dark yellowish brown (10YR 4/4) clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—14 to 20 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium prismatic structure parting to moderate fine subangular blocky; friable;

very fine and fine roots; common very fine and fine vesicular and tubular pores; few distinct discontinuous dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; very strongly acid; clear wavy boundary.

Bt3—20 to 28 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium prismatic structure parting to moderate fine subangular blocky; friable; common very fine and fine roots; few very fine and fine vesicular and tubular pores; common distinct continuous grayish brown (10YR 5/2) clay films on vertical faces of peds and common distinct continuous brown (10YR 4/3) clay films on vertical and horizontal faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common distinct discontinuous light gray (10YR 7/2) clay depletions on vertical faces of peds; very strongly acid; clear wavy boundary.

Btx1—28 to 37 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; firm; few very fine roots between peds; few very fine and fine vesicular and tubular pores; few patchy distinct yellowish red (5YR 4/6) iron stains on faces of peds; common distinct continuous grayish brown (10YR 5/2) clay films on faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common distinct continuous light gray (10YR 7/1) clay depletions on faces of peds; few fine rounded iron and manganese concretions; brittle in places; very strongly acid; gradual wavy boundary.

Btx2—37 to 46 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak coarse prismatic structure parting to weak medium subangular blocky; firm; few very fine roots between peds; few fine vesicular and tubular pores; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common distinct continuous light gray (10YR 7/1) clay depletions on faces of peds; few fine rounded weakly cemented iron and manganese concretions; brittle; very strongly acid; clear smooth boundary.

2Btx3—46 to 54 inches; dark yellowish brown (10YR 4/4) silt loam; moderate very coarse prismatic structure; firm; many fine vesicular and tubular pores; common distinct continuous grayish brown (10YR 5/2) clay films on faces of peds; few fine distinct strong brown (7.5YR 5/8) masses that

have accumulated iron and are in the matrix; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common distinct continuous light gray (10YR 7/1) clay depletions on vertical faces of peds; 2 percent sandstone and siltstone channers; brittle; strongly acid; gradual wavy boundary.

3Btx4—54 to 77 inches; yellowish brown (10YR 5/4) loam; moderate very coarse prismatic structure parting to moderate thin platy; firm; common faint continuous dark yellowish brown (10YR 4/4) clay films on horizontal faces of peds; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds; common distinct continuous light gray (10YR 7/1) clay depletions on faces of peds; few black (10YR 2/1) iron and manganese concretions; brittle; strongly acid; clear smooth boundary.

3Bt—77 to 90 inches; yellowish brown (10YR 5/4) extremely channery clay loam; moderate very fine angular blocky structure; firm; common distinct discontinuous brown (7.5YR 4/4) clay films on faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common medium prominent yellowish red (5YR 4/6) masses that have accumulated iron and are in the matrix; many distinct continuous pale brown (10YR 6/3) clay depletions on faces of peds; 80 percent sandstone and siltstone channers; moderately acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: 60 to more than 80 inches

Depth to the horizon with fragic soil properties: 24 to 40 inches

Depth to a fragipan: 40 to 50 inches

A or Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4

Texture—silt loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

Bt or BE horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 4 to 6; redoximorphic depletions in the lower part

Texture—silt loam or silty clay loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 6.5 in limed areas in the upper part

Btx horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8; redoximorphic depletions present

Texture—silt loam or silty clay loam

pH range—4.5 to 5.5

2Btx or 3Btx horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 6; redoximorphic depletions present

Texture—silt loam, loam, or clay loam

Content of rock fragments—0 to 2 percent

pH range—4.5 to 6.0

3Bt or 3BC horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 6; redoximorphic depletions present

Texture—loam or clay loam or the channery to extremely channery analogs of these textures; silt loam or sandy loam or the channery to extremely channery analogs of these textures

Content of rock fragments—2 to 80 percent; subhorizon contains more than 10 percent

pH range—4.5 to 6.0

Pottersville Series

Taxonomic classification: Fine-silty, mixed, active, mesic Typic Hapludalfs

Typical Pedon for the Series

Pottersville silt loam, on a 45 percent slope, in a forest; 2,200 feet west and 25 feet north of the southeast corner of sec. 16, T. 11 N., R. 2 W.; Owen County, Indiana.

A—0 to 2 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; many very fine and fine roots; many very fine and fine interstitial pores; moderately acid; abrupt smooth boundary.

EB—2 to 7 inches; yellowish brown (10YR 5/4) silt loam; moderate fine granular structure; friable; many very fine and fine roots; common very fine and fine interstitial and tubular pores; very strongly acid; clear wavy boundary.

Bt1—7 to 12 inches; yellowish brown (10YR 5/6) silt loam; weak very fine subangular blocky structure; friable; common very fine and fine roots; common very fine and fine tubular pores; few distinct discontinuous dark yellowish brown (10YR 4/6) clay films on faces of peds and in pores; very strongly acid; clear wavy boundary.

Bt2—12 to 20 inches; yellowish brown (10YR 5/6) silty clay loam; weak fine subangular blocky structure; firm; common very fine and fine roots; few very fine and fine tubular pores; many distinct

discontinuous dark yellowish brown (10YR 4/6) clay films on faces of peds and in pores; very strongly acid; clear wavy boundary.

Bt3—20 to 24 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine and medium subangular blocky structure; firm; few very fine and fine roots; few very fine and fine tubular pores; many distinct continuous dark yellowish brown (10YR 4/6) clay films on faces of peds and in pores; very strongly acid; clear wavy boundary.

2Bt4—24 to 31 inches; yellowish brown (10YR 5/6) silty clay; moderate fine angular blocky structure; firm; many distinct continuous dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; strongly acid; clear wavy boundary.

2BCtk—31 to 46 inches; yellowish brown (10YR 5/4) silty clay; moderate medium angular blocky structure; very firm; few distinct patchy dark yellowish brown (10YR 4/4) clay films on faces of peds; common distinct discontinuous grayish brown (2.5Y 5/2) clay depletions on vertical faces of peds; many fine light gray (10YR 7/2) calcium carbonate nodules; strongly effervescent; moderately alkaline; gradual wavy boundary.

2C—46 to 60 inches; yellowish brown (10YR 5/4) stratified silty clay, silty clay loam, and silt loam; massive; very firm; many fine light gray (10YR 7/2) calcium carbonate nodules; strongly effervescent; moderately alkaline.

Series Range in Characteristics

Depth to the base of soil development: 40 to 60 inches

Depth to carbonates: 30 to 50 inches

A or Ap horizon:

Color—hue of 10YR, value of 3, and chroma of 2 or 3 (A); hue of 10YR, value of 4 or 5, and chroma of 4 to 6 (Ap)

Texture—silt loam

pH range—5.6 to 7.3

EB, BE, or Bt horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 4 to 6

Texture—silt loam or silty clay loam

pH range—4.5 to 7.3

2Bt or 2BCtk horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6

Texture—silty clay

pH range—5.1 to 8.4

2C horizon:

Color—hue of 10YR, value of 5, and chroma of 3 or 4

Texture—stratified silty clay or silty clay loam with minor strata of silt loam

pH range—7.4 to 8.4

Princeton Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Hapludalfs

Typical Pedon for the Series

Princeton fine sandy loam, on a slope of 4 percent, in an alfalfa field; 2,380 feet west and 360 feet south of the northeast corner of sec. 5, T. 10 N., R. 9 W.; Vigo County, Indiana.

Ap—0 to 8 inches; brown (10YR 4/3) fine sandy loam, grayish brown (10YR 5/2) dry; weak fine granular structure; very friable; many medium roots; neutral; abrupt smooth boundary.

Bt1—8 to 11 inches; strong brown (7.5YR 5/6) fine sandy loam; weak thick platy structure parting to weak fine and very fine subangular blocky; friable; common medium roots; common distinct continuous very pale brown (10YR 7/3) silt coatings on faces of peds; few distinct discontinuous dark yellowish brown (10YR 4/4) clay films on faces of peds; neutral; clear wavy boundary.

Bt2—11 to 26 inches; brown (7.5YR 4/4) sandy clay loam; moderate medium subangular blocky structure; firm; common medium and fine roots; many distinct continuous reddish brown (5YR 4/4) clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt3—26 to 41 inches; yellowish red (5YR 5/6) fine sandy loam; weak coarse subangular blocky structure; friable; few fine roots; common distinct discontinuous reddish brown (5YR 4/4) clay films on faces of peds; very strongly acid; gradual wavy boundary.

E and Bt—41 to 60 inches; brown (7.5YR 4/4) loamy sand (E); weak coarse subangular blocky structure; very friable; common wavy discontinuous strong brown (7.5YR 5/6) fine sandy loam lamellae (Bt); strongly acid; gradual wavy boundary.

CB—60 to 80 inches; strong brown (7.5YR 5/6) and brown (7.5YR 4/4) stratified loamy sand and fine sand; single grain; loose; strongly acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: 40 to more than 80 inches

A or Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4

Texture—fine sandy loam or sandy loam

pH range—5.1 to 7.3

Bt horizon:

Color—hue of 10YR, 7.5YR, or 5YR; value of 4 or 5; and chroma of 4 to 6

Texture—sandy clay loam, fine sandy loam, or loam; thin layers of sandy loam or loamy fine sand

pH range—4.5 to 7.3

E and Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 6

Texture—sand, fine sand, loamy fine sand, or loamy sand; lamellae and/or bands of sandy loam, loam, or fine sandy loam

pH range—4.5 to 6.0 in the upper part; ranges to 7.3 in the lower part

BC, CB, or C horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 to 6

Texture—stratified fine sand, loamy fine sand, fine sandy loam, sand, or loamy sand; thin strata of very fine sand or loam

pH range—5.1 to 7.3 in the upper part; ranges to 8.4 in the lower part

Romona Series

Taxonomic classification: Fine, mixed, superactive, mesic Typic Argiudolls

Typical Pedon for the Series

Romona flaggy silty clay loam, on a slope of 47 percent, in a forest; 1,900 feet north and 300 feet west of the southeast corner of sec. 4, T. 10 N., R. 3 W.; Owen County, Indiana.

A1—0 to 1 inch; very dark grayish brown (10YR 3/2) flaggy silty clay loam, dark grayish brown (10YR 4/2) dry; moderate very fine subangular blocky structure; friable; many very fine and fine roots; many very fine and fine tubular pores; 30 percent flagstones; neutral; abrupt smooth boundary.

A2—1 to 6 inches; very dark grayish brown (10YR 3/2) flaggy silty clay loam, dark grayish brown (10YR 4/2) dry; moderate very fine angular blocky structure; friable; many fine and medium roots; common very fine interstitial and tubular pores; many distinct continuous very dark gray (10YR 3/1) organic coatings on faces of peds and in

pores; 30 percent flagstones; neutral; gradual wavy boundary.

Bt1—6 to 9 inches; dark brown (10YR 3/3) silty clay loam, brown (10YR 4/3) dry; strong fine angular blocky structure; firm; common fine and medium roots; common very fine and fine vesicular and tubular pores; many distinct continuous very dark gray (10YR 3/1) organo-clay films on faces of peds and in pores; 12 percent channers; neutral; gradual wavy boundary.

Bt2—9 to 19 inches; dark yellowish brown (10YR 3/4) silty clay; strong medium angular blocky structure; firm; few fine and medium roots; few very fine and fine vesicular and tubular pores; many distinct continuous very dark grayish brown (10YR 3/2) organo-clay films on faces of peds and in pores; 10 percent channers; neutral; gradual wavy boundary.

Bt3—19 to 27 inches; dark brown (7.5YR 3/4) extremely flaggy silty clay; strong medium angular blocky structure; firm; few fine and medium roots; few very fine vesicular and tubular pores; common distinct continuous dark brown (7.5YR 3/2) organo-clay films on faces of peds and in pores; 65 percent flagstones; neutral; abrupt irregular boundary.

R—27 inches; indurated limestone; few solution channels filled with dark brown (7.5YR 3/4) silty clay.

Series Range in Characteristics

Thickness of the mollic epipedon: 7 to 12 inches

Depth to lithic contact: 20 to 40 inches

Kind of rock fragments: Flagstones and channers of limestone lithology

A horizon:

Color—hue of 10YR, value of 2 or 3, and chroma of 2 or 3

Texture—flaggy silty clay loam or silty clay loam

Content of rock fragments—10 to 35 percent

pH range—6.1 to 7.3

Bt1 or Bt2 horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2 to 4

Texture—silty clay loam or silty clay or the channery or flaggy analogs of these textures

Content of rock fragments—10 to 35 percent

pH range—6.1 to 7.3

Bt3 or BC horizon:

Color—hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 3 or 4

Texture—flaggy silty clay, very flaggy silty clay, or extremely flaggy silty clay

Content of rock fragments—30 to 75 percent
pH range—6.1 to 7.8

Ryker Series

Taxonomic classification: Fine-silty, mixed, active, mesic Typic Paleudalfs

Typical Pedon for the Series

Ryker silt loam, on a convex slope of 1 percent, in a cultivated field; 950 feet south and 2,000 feet west of the northeast corner of sec. 24, T. 3 N., R. 9 E.; Jefferson County, Indiana.

Ap—0 to 6 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; common fine roots; neutral; abrupt smooth boundary.

BE—6 to 12 inches; yellowish brown (10YR 5/4) silt loam; weak fine and medium subangular blocky structure; friable; common fine roots; neutral; clear smooth boundary.

Bt1—12 to 27 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; many distinct continuous brown (7.5YR 4/4) clay films on faces of peds; neutral; gradual wavy boundary.

Bt2—27 to 38 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; many distinct continuous brown (7.5YR 4/4) clay films on faces of peds; few distinct continuous very pale brown (10YR 7/3) silt coatings on faces of peds; strongly acid; gradual wavy boundary.

2Bt3—38 to 58 inches; yellowish red (5YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; many distinct continuous reddish brown (5YR 4/4) clay films on faces of peds and in pores; few distinct discontinuous pale brown (10YR 6/3) silt coatings on faces of peds; 3 percent fine gravel; very strongly acid; gradual wavy boundary.

2Bt4—58 to 67 inches; yellowish red (5YR 5/6) silty clay loam; weak medium and coarse subangular blocky structure; firm; many distinct patchy reddish brown (5YR 4/4) clay films in pores and on faces of peds; common medium light yellowish brown (10YR 6/4) silt coatings in channels; about 3 percent fine gravel; very strongly acid; clear smooth boundary.

3Bt5—67 to 80 inches; yellowish red (5YR 5/6) silty clay; weak medium and coarse subangular blocky structure; firm; many distinct patchy reddish brown (5YR 4/4) clay films in pores and on faces of peds;

common medium light yellowish brown (10YR 6/4) silt coatings in channels; about 5 percent fine gravel; very strongly acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: 60 to more than 80 inches

Depth to lithic contact: 60 to more than 80 inches

Thickness of the loess: 20 to 40 inches

A or Ap horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2 or 3 (A); hue of 10YR, value of 4 or 5, and chroma of 2 to 6 (Ap)

Texture—silt loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8

Texture—silt loam or silty clay loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas in the upper part

2Bt horizon:

Color—hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8

Texture—loam, silty clay loam, clay loam, or silt loam

Content of rock fragments—2 to 15 percent pebbles

pH range—4.5 to 5.5

3Bt or 3BC horizon:

Color—hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 4 to 8

Texture—silty clay or clay

Content of rock fragments—0 to 15 percent

pH range—4.5 to 6.0 in the upper part; ranges to 7.3 in the lower part

Shakamak Series

Taxonomic classification: Fine-silty, mixed, active, mesic Aquic Fragiudalfs

Typical Pedon for the Series

Shakamak silt loam, on a slope of 2 percent, in a cultivated field; 150 feet west and 2,600 feet north of the southeast corner of sec. 32, T. 8 N., R. 6 W.; Greene County, Indiana.

Ap—0 to 10 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine granular

- structure; friable; many fine roots; neutral; abrupt wavy boundary.
- BE—10 to 14 inches; light yellowish brown (10YR 6/4) silt loam; weak medium subangular blocky structure; friable; many fine roots; wormholes and root channels filled with brown (10YR 4/3) silt loam; few fine tubular pores; strongly acid; clear wavy boundary.
- Bt1—14 to 18 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few roots; few fine tubular pores; many distinct discontinuous dark yellowish brown (10YR 4/4) clay films on faces of peds; strongly acid; clear wavy boundary.
- Bt2—18 to 23 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; few fine tubular pores; many distinct continuous grayish brown (10YR 5/1) clay films on faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine faint strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; many distinct continuous light gray (10YR 7/2) clay depletions on faces of peds; very strongly acid; clear wavy boundary.
- Bt3—23 to 28 inches; yellowish brown (10YR 5/6) silty clay loam; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; common fine tubular pores; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine faint strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; many distinct continuous light gray (10YR 7/2) clay depletions on vertical and horizontal faces of peds; few black (10YR 2/1) weakly cemented iron and manganese concretions; very strongly acid; clear wavy boundary.
- Btx1—28 to 35 inches; yellowish brown (10YR 5/6) silty clay loam; moderate coarse prismatic structure parting to moderate thick platy; very firm; few fine roots between peds; many continuous distinct grayish brown (10YR 5/2) clay films on faces of peds; many distinct continuous pale brown (10YR 6/3) silt coatings on vertical faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common fine distinct brown (7.5YR 4/4) masses that have accumulated iron and are in the matrix; 50 percent brittle; very strongly acid; gradual wavy boundary.
- Btx2—35 to 47 inches; yellowish brown (10YR 5/6) silt loam; moderate very coarse prismatic structure parting to moderate very thick platy; very firm; common fine vesicular pores; many distinct continuous grayish brown (10YR 5/2) clay films on vertical faces of peds; many distinct continuous pale brown (10YR 6/3) silt coatings on vertical faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; 65 percent brittle; very strongly acid; clear wavy boundary.
- Btx3—47 to 57 inches; yellowish brown (10YR 5/6) silt loam; moderate very coarse prismatic structure; very firm; few fine vesicular pores; common patchy distinct brown (7.5YR 4/4) clay films on faces of peds; few fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; many distinct continuous grayish brown (10YR 5/2) clay depletions on vertical faces of peds; few fine black (10YR 2/1) weakly cemented iron and manganese concretions; 2 percent fine pebbles; 70 percent brittle; very strongly acid; gradual wavy boundary.
- 2Bt1—57 to 69 inches; yellowish brown (10YR 5/6) silt loam; moderate coarse subangular blocky structure; firm; few very fine tubular pores; many prominent continuous grayish brown (10YR 5/2) clay films on faces of peds; few distinct discontinuous brown (10YR 5/3) silt coatings on faces of peds; common medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; few fine black (10YR 2/1) weakly cemented iron and manganese concretions; 2 percent fine pebbles; very strongly acid; gradual wavy boundary.
- 2Bt2—69 to 80 inches; yellowish brown (10YR 5/6) clay loam; moderate coarse subangular blocky structure; firm; many prominent continuous grayish brown (10YR 5/2) clay films on faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common medium distinct strong brown (7.5YR 5/8) masses that have accumulated iron and are in the matrix; common fine black (10YR 2/1) weakly cemented iron and manganese concretions; 3 percent fine pebbles; strongly acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: More than 80 inches

Depth to the horizon with fragic soil properties: 20 to 36 inches

Depth to a fragipan: 30 to 40 inches

Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3

Texture—silt loam
pH range—4.5 to 7.3; depends upon liming practices

Bt horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 4 to 6; redoximorphic depletions in upper 10 inches of the argillic horizon
Texture—silt loam or silty clay loam
pH range—4.5 to 5.5; ranges to 7.3 in limed areas

Btx horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8; redoximorphic depletions present
Texture—silt loam or silty clay loam
pH range—4.5 to 5.5

2Bt horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8; redoximorphic depletions present
Texture—loam or clay loam; ranges to silt loam in the upper part
Content of rock fragments—1 to 7 percent pebbles
pH range—4.5 to 6.5

Shircliff Series

Taxonomic classification: Fine, mixed, active, mesic Oxyaquic Hapludalfs

Typical Pedon for the Series

Shircliff silt loam, on a slope of 3 percent, in a cultivated field; 400 feet east and 750 feet north of the southwest corner of sec. 13, T. 5 S., R. 1 W.; Perry County, Indiana.

Ap—0 to 8 inches; 90 percent brown (10YR 5/3) and 10 percent yellowish brown (10YR 5/6) silt loam, very pale brown (10YR 7/3) and very pale brown (10YR 7/4) dry; weak fine subangular blocky structure; friable; many fine roots; strongly acid; abrupt smooth boundary.

Bt1—8 to 19 inches; yellowish brown (10YR 5/6) silty clay loam; strong fine subangular blocky structure; friable; common fine roots; common faint discontinuous dark yellowish brown (10YR 4/6) clay films on faces of peds; many patchy distinct light yellowish brown (10YR 6/4) silt coatings on faces of peds; very strongly acid; clear wavy boundary.

2Bt2—19 to 28 inches; strong brown (7.5YR 5/6) silty clay; moderate medium subangular blocky structure; firm; common fine roots; many distinct discontinuous brown (7.5YR 4/4) clay films on

faces of peds; common medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; few patchy distinct light yellowish brown (10YR 6/4) silt coatings on faces of peds; very strongly acid; clear wavy boundary.

2Bt3—28 to 43 inches; dark yellowish brown (10YR 4/4) silty clay; strong coarse angular blocky structure; very firm; few fine roots; many prominent continuous light brownish gray (10YR 6/2) clay films on faces of peds; many medium prominent gray (10YR 6/1) iron depletions in the matrix; moderately acid; clear wavy boundary.

2Btk1—43 to 53 inches; dark yellowish brown (10YR 4/4) silty clay; strong coarse angular blocky structure; very firm; few fine roots; common distinct discontinuous brown (10YR 5/3) clay films on faces of peds; few distinct discontinuous light brownish gray (10YR 6/2) clay films on faces of peds; many medium prominent gray (10YR 6/1) iron depletions in the matrix; few medium irregular calcium carbonate nodules; slightly effervescent; moderately alkaline; clear wavy boundary.

2Btk2—53 to 59 inches; brown (10YR 5/3) silty clay loam; strong coarse subangular blocky structure; very firm; few fine roots; common faint discontinuous brown (10YR 5/3) clay films on faces of peds; few patchy prominent light brownish gray (10YR 6/2) clay films on faces of peds; common fine prominent light brownish gray (10YR 6/2) iron depletions in the matrix; many coarse distinct yellowish brown (10YR 5/8) masses that have accumulated iron and are in the matrix; few medium irregular calcium carbonate nodules; strongly effervescent; moderately alkaline; clear wavy boundary.

2Btk3—59 to 80 inches; dark yellowish brown (10YR 4/4) silty clay; strong coarse subangular blocky structure; very firm; common distinct discontinuous brown (10YR 5/3) and few prominent discontinuous gray (10YR 6/1) clay films on faces of peds; common fine prominent gray (10YR 6/1) iron depletions in the matrix; few medium irregular calcium carbonate nodules; strongly effervescent; moderately alkaline.

Series Range in Characteristics

Depth to carbonates: 30 to 60 inches; severely eroded areas range to a depth of less than 30 inches

A or Ap horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 1 to 3 (A); hue of 10YR, value of 4 or 5, and chroma of 2 or 3 (Ap)
Texture—silt loam
pH range—5.1 to 7.3

Bt horizon:

Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6

Texture—silt loam or silty clay loam

pH range—4.5 to 6.0

2Bt horizon:

Color—hue of 10YR, 2.5Y, or 7.5YR; value of 4 or 5; and chroma of 4 to 6; redoximorphic depletions present

Texture—silty clay loam or silty clay

pH range—4.5 to 7.8

2Btk, 2BCK, 2Btgk, or 2BCgk horizon:

Color—hue of 2.5Y or 10YR, value of 4 to 6, and chroma of 2 to 4

Texture—silty clay, silty clay loam, or silt loam

pH range—7.8 to 8.4

Solsberry Series

Taxonomic classification: Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs

Taxadjunct features: The Solsberry soils in map units Solsberry silt loam, 12 to 18 percent slopes, eroded; Solsberry silt loam, 12 to 18 percent slopes, severely eroded; and Solsberry silt loam, 12 to 18 percent slopes, gullied, do not have a subhorizon with a fragipan that has vertical streaks that have a mean horizontal dimension of 4 inches or more. This difference, however, does not affect the usefulness or behavior of the soils.

Typical Pedon for the Series

Solsberry silt loam, on a slope of 8 percent, in a pine woodland; 525 feet west and 750 feet south of the northeast corner of sec. 16, T. 10 N., R. 4 W.; Owen County, Indiana.

Ap—0 to 6 inches; yellowish brown (10YR 5/4) silt loam, very pale brown (10YR 7/4) dry; weak fine subangular blocky structure; friable; many fine roots; very fine interstitial and tubular pores; strongly acid; abrupt smooth boundary.

BE—6 to 11 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable; common fine roots; very fine and fine interstitial and tubular pores; common faint discontinuous dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; common distinct discontinuous pale brown (10YR 6/3) silt coatings on faces of peds; very strongly acid; clear wavy boundary.

Bt—11 to 17 inches; yellowish brown (10YR 5/6) silt loam; moderate coarse subangular blocky

structure; friable; few fine roots; very fine and fine tubular pores; many faint continuous dark yellowish brown (10YR 4/6) clay films on faces of peds and in pores; common distinct continuous pale brown (10YR 6/3) silt coatings on faces of peds; very strongly acid; abrupt irregular boundary.

Btx1—17 to 23 inches; yellowish brown (10YR 5/6) silt loam; moderate medium prismatic structure; firm; few fine roots between peds; very fine and fine vesicular and tubular pores; many faint continuous dark yellowish brown (10YR 4/6) clay films on faces of peds and in pores; common distinct continuous light brownish gray (10YR 6/2) clay films and pale brown (10YR 6/3) silt coatings on faces of peds; few fine distinct pale brown (10YR 6/3) iron depletions in the matrix; brittle; very strongly acid; clear wavy boundary.

2Btx2—23 to 29 inches; yellowish brown (10YR 5/6) silt loam; strong very coarse prismatic structure parting to strong medium platy; firm; few fine roots between peds; very fine and fine vesicular and tubular pores; common distinct continuous brown (7.5YR 4/4) clay films on vertical and horizontal faces of peds; common prominent continuous gray (10YR 6/1) clay films and common distinct discontinuous light brownish gray (10YR 6/2) clay depletions on vertical faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; 2 percent channers and pebbles; brittle; very strongly acid; clear wavy boundary.

2Btx3—29 to 39 inches; yellowish brown (10YR 5/6) loam; strong very coarse prismatic structure; firm; very fine and fine vesicular and tubular pores; common distinct discontinuous brown (7.5YR 4/4) clay films on faces of peds; many distinct continuous light brownish gray (10YR 6/2) clay depletions on faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; 8 percent channers and pebbles; brittle; very strongly acid; gradual wavy boundary.

3Btb1—39 to 45 inches; yellowish brown (10YR 5/6) channery clay loam; strong medium subangular blocky structure; firm; very fine and fine vesicular and tubular pores; many continuous prominent grayish brown (10YR 5/2) clay films on faces of peds; few distinct discontinuous light brownish gray (10YR 6/2) clay depletions on faces of peds; common fine distinct brown (7.5YR 4/4) masses that have accumulated iron and are in the matrix; 15 percent channers and pebbles; very strongly acid; gradual wavy boundary.

3Btb2—45 to 56 inches; strong brown (7.5YR 5/6) clay loam; strong medium angular blocky structure; very firm; many prominent continuous grayish brown (10YR 5/2) clay films on faces of peds; few distinct discontinuous light brownish gray (10YR 6/2) clay depletions on faces of peds; common fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; few fine and medium irregular weakly cemented iron and manganese concretions; 14 percent channers and pebbles; very strongly acid; gradual wavy boundary.

3Btb3—56 to 70 inches; yellowish brown (10YR 5/6) channery clay loam; strong coarse subangular blocky structure; very firm; many prominent continuous grayish brown (10YR 5/2) clay films on faces of peds; common fine distinct reddish yellow (7.5YR 6/8) masses that have accumulated iron and are in the matrix; common fine and medium irregular iron and manganese concretions; 17 percent channers and pebbles; strongly acid; gradual wavy boundary.

3Btb4—70 to 80 inches; yellowish brown (10YR 5/6) channery clay loam; weak very coarse subangular blocky structure; firm; many prominent continuous grayish brown (10YR 5/2) clay films on faces of peds; common fine distinct reddish yellow (7.5YR 6/8) masses that have accumulated iron and are in the matrix; many fine and medium iron and manganese concretions; 15 percent sandstone channers; slightly acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: 72 to more than 80 inches

Thickness of the loess: 20 to 40 inches

Depth to a fragipan: 18 to 36 inches

Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6

Texture—silt loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

Bt or Btx horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 4 to 8

Texture—silt loam or silty clay loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 6.5 in limed areas in the upper part

2Btx horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 to 8

Texture—silt loam, loam, or clay loam

Content of rock fragments—2 to 10 percent pebbles
pH range—4.5 to 5.5

3Btb horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 to 8

Texture—clay loam, channery clay loam, loam, channery loam, or clay

Content of rock fragments—5 to 35 percent; 1

subhorizon averages 15 percent or more channers
pH range—4.5 to 6.5

Kind of rock fragments—dominantly sandstone channers

Steff Series

Taxonomic classification: Fine-silty, mixed, active, mesic Fluvaquent Dystrudepts

Taxadjunct features: The Steff soils in this survey area have less clay in the subsoil. This difference, however, does not affect the usefulness or behavior of the soils.

Typical Pedon for the MLRA

Steff silt loam, occasionally flooded, on a slope of 1 percent, in a cultivated field; 595 feet west and 65 feet north of the center of sec. 32, T. 3 N., R. 7 E.; Scott County, Indiana.

Ap—0 to 11 inches; yellowish brown (10YR 5/4) silt loam, very pale brown (10YR 7/4) dry; weak coarse subangular blocky structure parting to moderate medium granular; friable; common very fine, fine, and few medium roots; moderately acid; abrupt smooth boundary.

Bw1—11 to 23 inches; yellowish brown (10YR 5/6) silt loam; weak very coarse prismatic structure; friable; common very fine and fine roots; common distinct discontinuous yellowish brown (10YR 5/4) organic coatings on faces of peds; common fine distinct pale brown (10YR 6/3) and few light brownish gray (10YR 6/2) iron depletions in the matrix; few prominent discontinuous strong brown (7.5YR 5/8) iron stains on faces of peds; common fine rounded iron and manganese concretions; strongly acid; clear wavy boundary.

Bw2—23 to 41 inches; yellowish brown (10YR 5/6) silt loam; weak very coarse prismatic structure; friable; few very fine roots; few distinct discontinuous yellowish brown (10YR 5/4) organic coatings on faces of peds; many medium distinct light brownish gray (2.5Y 6/2) iron depletions in the matrix; common prominent discontinuous

strong brown (7.5YR 5/8) iron stains on faces of peds; very strongly acid; gradual wavy boundary.
 C—41 to 60 inches; yellowish brown (10YR 5/6) silt loam; massive; friable; many medium distinct light brownish gray (2.5Y 6/2) iron depletions in the matrix; common distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common prominent discontinuous strong brown (7.5YR 4/6) iron stains on faces of peds; strongly acid.

MLRA Range in Characteristics

Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
 Texture—silt loam
 pH range—4.5 to 7.3

Bw or Bg horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 6 (2 chroma below a depth of 20 inches)
 Texture—silt loam
 pH range—4.5 to 5.5

C or Cg horizon:

Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 6
 Texture—silt loam; thin strata of sandy loam or loam below a depth of 40 inches
 pH range—4.5 to 5.5

Stendal Series

Taxonomic classification: Fine-silty, mixed, active, acid, mesic Fluvaquentic Endoaquepts

Typical Pedon for the Series

Stendal silt loam, on a slope of 0.5 percent, in a cultivated field; 1,400 feet north and 395 feet west of the southeast corner of sec. 29, T. 3 N., R. 7 E.; Scott County, Indiana.

Ap—0 to 8 inches; yellowish brown (10YR 5/4) silt loam, very pale brown (10YR 7/4) dry; weak medium subangular blocky structure parting to moderate medium granular; friable; common very fine roots; slightly acid; abrupt smooth boundary.
 C—8 to 17 inches; light yellowish brown (10YR 6/4) silt loam; weak coarse prismatic structure; friable; common very fine roots; common distinct continuous yellowish brown (10YR 5/4) organic coatings on faces of peds; many medium prominent light brownish gray (2.5Y 6/2) iron depletions in the matrix; common fine distinct

brownish yellow (10YR 6/8) masses that have accumulated iron and are in the matrix; few fine rounded black (10YR 2/1) iron and manganese concretions; very strongly acid; gradual wavy boundary.

Cg1—17 to 40 inches; light brownish gray (2.5Y 6/2) silt loam; weak coarse prismatic structure; friable; few very fine roots; few distinct continuous yellowish brown (10YR 5/4) organic coatings on vertical faces of peds; many medium prominent light yellowish brown (10YR 6/4) and common yellowish brown (10YR 5/8) masses that have accumulated iron and are in the matrix; common fine rounded and few medium irregular iron and manganese concretions; very strongly acid; gradual smooth boundary.

Cg2—40 to 60 inches; light brownish gray (2.5Y 6/2) silt loam; massive; firm; many medium prominent strong brown (7.5YR 5/8) and common distinct light yellowish brown (10YR 6/4) masses that have accumulated iron and are in the matrix; common medium irregular and few medium irregular iron and manganese concretions; very strongly acid.

Series Range in Characteristics

A or Ap horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 1 or 2 (A); hue of 10YR, value of 4 or 5, and chroma of 2 to 4 (Ap)
 Texture—silt loam
 pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

C horizon:

Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6; iron depletions present
 Texture—silt loam or silty clay loam
 pH range—4.5 to 5.5

Cg or C horizon:

Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 to 6; horizons with chroma of 3 or more below a depth of 40 inches
 Texture—silt loam; strata of sandy loam, loam, or fine sandy loam below a depth of 40 inches
 pH range—4.5 to 5.5

Stinesville Series

Taxonomic classification: Fine-silty, mixed, active, mesic Typic Paleudalfs

Typical Pedon for the Series

Stinesville silt loam, on a convex, southwest-facing slope of 8 percent, in a grass field formerly used for

cropland; 2,300 feet west and 725 feet south of the northeast corner of sec. 30, T. 11 N., R. 2 W.; Owen County, Indiana (fig. 23).

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine subangular blocky structure parting to moderate medium and coarse granular; friable; many fine and medium roots; common fine continuous tubular pores; neutral; clear smooth boundary.

Bt1—9 to 16 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak fine and medium subangular blocky structure; friable; many fine and medium roots; few fine continuous tubular pores; common faint continuous brown (10YR 4/3) clay films on faces of peds; neutral; clear smooth boundary.

Bt2—16 to 25 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; many fine and medium roots; common fine continuous tubular pores; many distinct continuous brown (10YR 4/3) clay films on faces of peds; strongly acid; gradual smooth boundary.

Bt3—25 to 33 inches; dark yellowish brown (10YR 4/6) silt loam; moderate fine and medium subangular blocky structure; friable; common fine and medium roots; many fine continuous tubular pores; many distinct continuous brown (10YR 4/3) and dark brown (10YR 3/3) clay films on faces of peds; common distinct patchy yellowish brown (10YR 5/4) silt coatings on faces of peds; very strongly acid; clear smooth boundary.

2Bt4—33 to 44 inches; yellowish brown (10YR 5/4) silt loam; weak coarse prismatic structure parting to weak coarse subangular blocky; friable; few fine and medium roots; many fine continuous tubular pores; common distinct discontinuous brown (10YR 4/3) clay films on faces of peds; common distinct discontinuous yellowish brown (10YR 5/4) silt coatings on faces of peds; common fine rounded iron and manganese concretions; very strongly acid; gradual smooth boundary.

2Bt5—44 to 55 inches; strong brown (7.5YR 4/6) silt loam; weak coarse prismatic structure parting to weak coarse subangular blocky; firm; few fine and medium roots; many fine continuous tubular pores; common distinct patchy brown (10YR 5/3) clay films on faces of peds; many distinct discontinuous yellowish brown (10YR 5/4) silt coatings on faces of peds; common fine rounded iron and manganese concretions; very strongly acid; gradual wavy boundary.

3Bt6—55 to 63 inches; 80 percent yellowish red (5YR 4/6) clay loam and 20 percent strong brown

(7.5YR 4/6) silt loam; moderate fine and medium subangular blocky structure; firm; few fine and medium roots; many fine continuous tubular pores; common distinct discontinuous brown (7.5YR 4/4) clay films on faces of peds; many distinct continuous yellowish brown (10YR 5/4) silt coatings on faces of peds; few fine rounded iron and manganese concretions; 2 percent pebbles; very strongly acid; gradual smooth boundary.

3Bt7—63 to 72 inches; reddish brown (5YR 4/4) clay loam; moderate fine and medium subangular blocky structure; firm; few fine and medium roots; few fine continuous tubular pores; many faint continuous yellowish red (5YR 4/6) clay films on faces of peds; common distinct discontinuous yellowish brown (10YR 5/4) silt coatings on vertical faces of peds; few fine rounded iron and manganese concretions; 3 percent pebbles; very strongly acid; gradual smooth boundary.

3Bt8—72 to 83 inches; yellowish red (5YR 4/6) silty clay loam; moderate fine and medium subangular blocky structure; firm; few fine continuous tubular pores; many distinct continuous red (2.5YR 4/6) clay films on faces of peds; common distinct discontinuous yellowish brown (10YR 5/4) silt coatings on vertical faces of peds; few fine rounded iron and manganese concretions; 5 percent channers; strongly acid; clear smooth boundary.

4Bt9—83 to 99 inches; red (2.5YR 4/6) clay; moderate fine subangular blocky structure; firm; few fine continuous tubular pores; many distinct continuous red (2.5YR 4/8) clay films on faces of peds; few distinct patchy yellowish brown (10YR 5/4) silt coatings on vertical faces of peds; common fine rounded iron and manganese concretions; strongly acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: More than 80 inches

Thickness of the loess: 40 to 70 inches

A or Ap horizon:

Color—hue of 10YR, value of 3, and chroma of 2 or 3 (A); hue of 10YR, value of 4 or 5, and chroma of 3 to 6 (Ap)

Texture—silt loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

Bt or BE horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8

Texture—silt loam or silty clay loam
pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas in the upper part

2Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8
Texture—silt loam
pH range—4.5 to 5.5

3Bt horizon:

Color—hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8
Texture—clay, clay loam, or silty clay loam; 5 to 25 percent silt loam
Content of rock fragments—1 to 10 percent pebbles
pH range—4.5 to 6.0

4Bt horizon

Color—hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 6
Texture—clay or silty clay
Content of rock fragments—0 to 8 percent pebbles
pH range—5.1 to 6.0 in the upper part; ranges to 7.3 in the lower part

Stonelick Series

Taxonomic classification: Coarse-loamy, mixed, superactive, calcareous, mesic Typic Udifluvents

Typical Pedon for the Series

Stonelick sandy loam, in a cultivated field; 100 feet east of the East Fork of Little Miami River and 0.25 mile west of Elklick Road; Clermont County, Batavia Township, Ohio.

Ap—0 to 12 inches; brown (10YR 4/3) sandy loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; slightly effervescent; slightly alkaline; clear smooth boundary.

C1—12 to 18 inches; brown (10YR 5/3) loamy sand; single grain; loose; slightly effervescent; slightly alkaline; clear smooth boundary.

C2—18 to 28 inches; brown (10YR 4/3) sandy loam; weak coarse subangular blocky structure; very friable; slightly effervescent; slightly alkaline; gradual smooth boundary.

C3—28 to 50 inches; dark grayish brown (10YR 4/2) loam; weak very fine subangular blocky structure; very friable; strongly effervescent; slightly alkaline; gradual smooth boundary.

C4—50 to 70 inches; brown (10YR 4/3) sandy loam; massive; very friable; strongly effervescent; slightly alkaline.

Series Range in Characteristics

Content of rock fragments: 0 to 15 percent pebbles throughout the profile

A or Ap horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 1 or 2 (A); hue of 10YR, value of 4 or 5, and chroma of 2 to 4 (Ap)
Texture—sandy loam
pH range—7.4 to 8.4

C horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4
Texture—stratified fine sandy loam, sandy loam, very fine sandy loam, loam, silt loam, loamy sand, or sand; loamy sand and sand comprises a total thickness of 15 inches or less above a depth of 40 inches
pH range—7.4 to 8.4

Stubenville Series

Taxonomic classification: Fine-silty, mixed, active, mesic Typic Hapludalfs

Typical Pedon for the Series

Stubenville silt loam, on a slope of 50 percent, in a forest; 1,750 feet south and 600 feet east of the northwest corner of sec. 32, T. 12 N., R. 3 W.; Owen County, Indiana.

Ap—0 to 1 inch; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate very fine granular structure; friable; many very fine and fine roots; many very fine and fine interstitial pores; very strongly acid; abrupt smooth boundary.

E—1 to 6 inches; brown (10YR 5/3) silt loam; weak very fine subangular blocky structure; friable; many fine and medium roots; many very fine and fine interstitial and tubular pores; very strongly acid; clear wavy boundary.

BE—6 to 10 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; friable; many fine and medium roots; common very fine and fine interstitial and tubular pores; 10 percent brown (10YR 5/3) silt loam filling wormcasts and root channels; very strongly acid; clear wavy boundary.

Bt1—10 to 17 inches; yellowish brown (10YR 5/4) silty clay loam; weak fine subangular blocky structure; friable; common fine and medium roots; common very fine and fine vesicular and tubular pores; common faint discontinuous dark yellowish brown

(10YR 4/4) clay films on faces of peds and in pores; strongly acid; clear wavy boundary.

Bt2—17 to 26 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium subangular blocky structure; friable; common fine and medium roots; common very fine vesicular and tubular pores; common distinct discontinuous brown (10YR 4/3) clay films on faces of peds and in pores; strongly acid; clear wavy boundary.

Bt3—26 to 36 inches; yellowish brown (10YR 5/6) silt loam; moderate medium and coarse subangular blocky structure; friable; few very fine and fine roots; few very fine vesicular and tubular pores; many distinct discontinuous dark yellowish brown (10YR 3/6) clay films on faces of peds; strongly acid; clear wavy boundary.

C—36 to 60 inches; pale brown (10YR 6/3) silt with 20 percent thin strata of silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; massive; very friable; few very fine and fine roots; few very fine vesicular and tubular pores; strongly effervescent; moderately alkaline.

Series Range in Characteristics

Depth to the base of the argillic horizon: 30 to 40 inches

Depth to carbonates: 30 to 40 inches

A or E horizon:

Color—hue of 10YR, value of 2 to 4, and chroma of 2 or 3 (A); hue of 10YR, value of 5, and chroma of 3 or 4 (E)

Texture—silt loam

pH range—4.5 to 6.0

BE or Bt horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 4 to 6

Texture—silt loam or silty clay loam

pH range—4.5 to 6.0

C horizon:

Color—hue of 10YR or 2.5Y, value of 2 to 6, and chroma of 3 to 6

Texture—stratified silt or silt loam; thin strata of silty clay loam

pH range—7.4 to 8.4

Taggart Series

Taxonomic classification: Fine-silty, mixed, active, mesic Aeric Epiaqualfs

Typical Pedon for the Series

Taggart silt loam, in a nearly level, convex area, in a field of hay; 1,460 feet east and 1,320 feet north of the

southwest corner of sec. 7, T. 11 N., R. 2 E.; Morgan County, Indiana.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, light brownish gray (10YR 6/2) dry; moderate fine and medium granular structure; friable; few fine faint light brownish gray (10YR 6/2) iron depletions throughout; common medium very dark brown (10YR 2/2) iron and manganese concretions; neutral; abrupt smooth boundary.

EB—8 to 12 inches; grayish brown (10YR 5/2) silt loam; weak thin platy structure; friable; common fine roots; common medium faint gray (10YR 5/1) and few fine distinct light gray (10YR 7/1) iron depletions in the matrix; common fine and medium very dark brown (10YR 2/2) iron and manganese concretions; moderately acid; abrupt wavy boundary.

Bt—12 to 23 inches; yellowish brown (10YR 5/4) silt loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds; 5 percent light gray (10YR 7/1) silt loam material filling channels; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine very dark brown (10YR 2/2) iron and manganese concretions; very strongly acid; clear wavy boundary.

Btg1—23 to 31 inches; grayish brown (10YR 5/2) silt loam; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; many distinct continuous gray (10YR 6/1) clay films on faces of peds; many coarse distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; many coarse very dark brown (10YR 2/2) iron and manganese concretions; very strongly acid; clear wavy boundary.

Btg2—31 to 45 inches; gray (10YR 6/1) silty clay loam; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; many distinct continuous gray (10YR 5/1) clay films on faces of peds; many coarse prominent yellowish brown (10YR 5/8) masses that have accumulated iron and are in the matrix; many coarse very dark brown (10YR 2/2) iron and manganese concretions; very strongly acid; abrupt irregular boundary.

2Bt—45 to 74 inches; yellowish brown (10YR 5/4) loam; moderate medium subangular blocky structure; firm; many distinct continuous gray (10YR 6/1) clay films on faces of peds; many fine and medium very dark brown (10YR 2/2) iron and

manganese concretions; very strongly acid; clear wavy boundary.

2BC—74 to 80 inches; strong brown (7.5YR 5/6) sandy clay loam; weak coarse subangular blocky structure; firm; strongly acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: 60 to more than 80 inches

Kind of rock fragments: Dominantly pebbles; includes cobbles

Ap or EB horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 1 to 3

Texture—silt loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

Bt or Btg horizon:

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 6

Texture—silt loam or silty clay loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas in the upper part

2Bt horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 3 to 6; redoximorphic features present

Texture—loam, clay loam, or sandy clay loam

Content of rock fragments—0 to 15 percent

pH range—4.5 to 6.5

2BC horizon:

Color—hue of 10YR, 7.5YR, or 5YR; value of 3 to 5; and chroma of 1 to 6

Texture—loam, sandy clay loam, or sandy loam

Content of rock fragments—0 to 20 percent

pH range—5.1 to 6.5

Tapawingo Series

Taxonomic classification: Fine-loamy, mixed, active, nonacid, mesic Typic Udorthents

Typical Pedon for the Series

Tapawingo silt loam, on a slope of 3 percent, in a cultivated field; 2,200 feet west and 200 feet north of the southeast corner of sec. 11, T. 10 N., R. 6 W.; Owen County, Indiana.

Ap—0 to 2 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate coarse granular structure; friable; many fine roots; 2 percent pebbles; slightly acid; abrupt smooth boundary.

CA—2 to 5 inches; 60 percent yellowish brown (10YR 5/6) and 40 percent dark yellowish brown (10YR 4/4) silt loam; 1/4- to 1-inch thick platy clods that part to moderate fine angular blocky clods; firm; many fine roots between clods; 2 percent channers and pebbles; slightly acid; abrupt smooth boundary.

Cd1—5 to 12 inches; 70 percent dark yellowish brown (10YR 4/4) and 30 percent yellowish brown (10YR 5/6) silt loam; massive; very firm; 1/4- to 1-inch thick platy clods with horizontal cleavage planes and vertical cracks that are 1 to 3 inches apart; common fine flat roots between clods; brittle; 9 percent channers and pebbles; neutral; clear smooth boundary.

Cd2—12 to 24 inches; 50 percent dark yellowish brown (10YR 4/6) and 50 percent yellowish brown (10YR 5/6), mixed silt loam and silty clay loam; massive; very firm; 1/4- to 1-inch thick platy clods with horizontal cleavage planes and vertical cracks that are 2 to 4 inches apart; common fine flat roots between clods; brittle; 3 percent channers and pebbles; slightly acid; clear wavy boundary.

Cd3—24 to 27 inches; 85 percent dark gray (10YR 4/1) silt loam and 15 percent 1/4- to 1/2-inch thick bodies of yellowish brown (10YR 5/6) loam; massive; firm; 9 percent shale, siltstone, and sandstone channers; neutral; abrupt wavy boundary.

2C—27 to 80 inches; mixed dark gray (10YR 4/1) very parachannery silt loam and very parachannery silty clay loam; massive; firm; 20 percent shale, siltstone and sandstone channers; 35 percent parachanners (shale); mixed slightly alkaline to slightly acid.

Series Range in Characteristics

Thickness of the soil material overlying graded spoil: 20 to 40 inches

Kind of rock fragments: Dominantly chert and very strongly cemented or indurated sandstone, siltstone, or shale.

Other features: Individual layers within the soil are variable in thickness and composition. Soils were excavated and graded with dozer and earth-moving pans.

Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6

Texture—silt loam

Content of rock fragments—1 to 5 percent

pH range—5.6 to 7.3

CA horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 1 to 8

Texture—silt loam, silty clay loam, loam, or clay loam

Content of rock fragments—1 to 10 percent

pH range—5.1 to 7.3

Cd horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 1 to 8

Texture—silt loam, silty clay loam, loam, or clay loam

Content of rock fragments—1 to 15 percent; pockets and lenses of parachanners (shale) are mixed into the lower 2 to 4 inches

pH range—5.1 to 7.3

2C horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 1 to 8

Texture—parachannery or very parachannery silt loam or silty clay loam

Content of rock fragments—2 to 25 percent

Content of pararock fragments—20 to 60 percent

pH range—5.6 to 7.8

Tipsaw Series

Taxonomic classification: Coarse-loamy, mixed, semiactive, mesic Typic Dystrudepts

Typical Pedon for the Series

Tipsaw very fine sandy loam, on a slope of 45 percent, in a hardwood forest; 400 feet south and 300 feet west of the northeast corner of sec. 3, T. 4 S., R. 3 W.; Perry County, Indiana.

A—0 to 2 inches; 80 percent very dark gray (10YR 3/1) and 20 percent brown (10YR 5/3) very fine sandy loam, dark gray (10YR 4/1) and light brownish gray (10YR 6/2) dry; weak very fine granular structure; friable; many fine and medium roots throughout; 5 percent strongly cemented sandstone channers; extremely acid; clear smooth boundary.

E—2 to 5 inches; brown (10YR 5/3) very fine sandy loam, very pale brown (10YR 7/3) dry; weak very fine subangular blocky structure; friable; many fine and medium roots throughout; 14 percent strongly cemented sandstone channers; extremely acid; clear wavy boundary.

Bw1—5 to 13 inches; yellowish brown (10YR 5/6) parachannery very fine sandy loam; moderate fine subangular blocky structure; friable; common fine

and medium roots throughout; 10 percent strongly cemented sandstone channers and 25 percent weakly cemented sandstone parachanners; very strongly acid; clear wavy boundary.

Bw2—13 to 20 inches; yellowish brown (10YR 5/6) channery very fine sandy loam; moderate fine subangular blocky structure; friable; common fine roots throughout; distinct continuous light yellowish brown (10YR 6/4) skeletans (sand or silt) on faces of peds and in pores; 30 percent strongly cemented sandstone channers and 30 percent weakly cemented parachanners; very strongly acid; clear wavy boundary.

BC—20 to 28 inches; strong brown (7.5YR 5/6) channery loam; weak coarse prismatic structure parting to moderate fine subangular blocky; friable; distinct discontinuous very pale brown (10YR 7/3) skeletans (sand or silt) on faces of peds and in pores; 30 percent strongly cemented sandstone channers and 30 percent weakly cemented parachanners; extremely acid; clear wavy boundary.

Cr—28 to 60 inches; weakly cemented and moderately cemented sandstone interbedded with siltstone, shale, and very strongly cemented sandstone.

Series Range in Characteristics

Depth to the base of the cambic horizon: 20 to 40 inches

Depth to paralithic contact: 20 to 40 inches

Kind of rock fragments: Dominantly sandstone channers

A horizon:

Color—hue of 10YR, value of 2 to 5, and chroma of 1 to 4

Texture—channery loam

Content of pararock fragments—0 to 15 percent

Content of rock fragments—15 to 30 percent

pH range—3.5 to 5.5

E or EB horizon (where present):

Color—hue of 10YR, value of 4 to 6, and chroma of 3 or 4

Texture—loam, sandy loam, fine sandy loam, or very fine sandy loam or the channery or parachannery analogs of these textures

Content of pararock fragments—0 to 30 percent

Content of rock fragments—0 to 30 percent

pH range—3.5 to 5.5

Bw horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6

Texture—loam, sandy loam, fine sandy loam, or

very fine sandy loam or the channery and parachannery to extremely parachannery analogs of these textures; silt loam or the channery and parachannery to extremely parachannery analogs of this texture

Content of pararock fragments—5 to 70 percent

Content of rock fragments—10 to 35 percent

pH range—3.5 to 5.5

BC horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 8

Texture—loam, sandy loam, or very fine sandy loam or the channery, very parachannery, or extremely parachannery analogs of these textures

Content of pararock fragments—5 to 70 percent

Content of rock fragments—10 to 35 percent

pH range—3.5 to 5.5

Cr horizon:

Kind of bedrock—weakly or moderately cemented sandstone interbedded with siltstone, shale, and strongly cemented to indurated sandstone

Tulip Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Oxyaquic Hapludults

Typical Pedon for the Series

Tulip silt loam, on a slope of 30 percent, in a forest; 350 feet east and 1,000 feet north of the southwest corner of sec. 36, T. 9 N., R. 3 W.; Owen County, Indiana.

Oi—0 to 1 inch; partially decomposed deciduous leaf litter.

A—1 to 3 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak very fine granular structure; friable; many fine to coarse roots; many fine interstitial and tubular pores; 14 percent sandstone and siltstone channers; extremely acid; abrupt wavy boundary.

E/A—3 to 7 inches; 85 percent brown (10YR 5/3) and 15 percent very dark grayish brown (10YR 3/2) channery silt loam; weak very fine subangular blocky structure; friable; many fine to coarse roots; many fine interstitial and tubular pores; very dark grayish brown (10YR 3/2) silt loam filling krotovinas; 28 percent sandstone and siltstone channers; extremely acid; abrupt wavy boundary.

BE—7 to 14 inches; yellowish brown (10YR 5/4) very channery silt loam; weak fine subangular blocky structure; friable; many fine to coarse roots; many

very fine and fine interstitial and tubular pores; 45 percent sandstone and siltstone channers; extremely acid; clear wavy boundary.

Bt1—14 to 26 inches; dark yellowish brown (10YR 4/6) channery silty clay loam; moderate medium subangular blocky structure; firm; common fine and medium roots; common very fine and fine tubular pores; many distinct continuous dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; 32 percent sandstone and siltstone channers; very strongly acid; clear wavy boundary.

Bt2—26 to 39 inches; light yellowish brown (10YR 6/4) channery loam; weak medium platy structure parting to moderate fine subangular blocky; friable; common fine and medium roots; common very fine and fine tubular pores; common distinct discontinuous yellowish brown (10YR 5/4) clay films on faces of peds and in pores; many distinct continuous pale brown (10YR 6/3) silt coatings on faces of peds; 32 percent sandstone and siltstone channers; very strongly acid; gradual wavy boundary.

Bt3—39 to 45 inches; light yellowish brown (10YR 6/4) channery loam; weak thin platy structure parting to weak fine subangular blocky; friable; common fine and medium roots; common very fine and fine tubular pores; common distinct patchy yellowish brown (10YR 5/4) clay films on faces of peds and in pores; few fine distinct yellowish brown (10YR 5/8) masses that have accumulated iron and are in the matrix; few fine distinct gray (10YR 6/1) iron depletions in the matrix; many distinct continuous pale brown (10YR 6/3) silt coatings on faces of peds; 22 percent sandstone and siltstone channers; very strongly acid; clear wavy boundary.

2Bt4—45 to 62 inches; yellowish brown (10YR 5/4) silty clay loam; moderate thin platy structure parting to moderate fine angular blocky; very firm; few fine roots between peds; few very fine and fine vesicular and tubular pores; many distinct continuous dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; many fine and medium prominent gray (10YR 6/1) iron depletions in the matrix; few fine distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; 3 percent siltstone channers; very strongly acid; gradual wavy boundary.

2Bt5—62 to 70 inches; yellowish brown (10YR 5/4) silty clay loam; weak thin platy structure parting to weak fine angular blocky; very firm; few fine roots between peds; few very fine and fine vesicular and tubular pores; few distinct discontinuous dark yellowish brown (10YR 4/4) clay films on faces of

pedes; many fine and medium prominent gray (10YR 6/1) iron depletions in the matrix; few fine distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; 2 percent siltstone channers; very strongly acid; gradual wavy boundary.

2CBg—70 to 80 inches; gray (10YR 6/1) clay; moderate thin platy structure; very firm; few fine roots between pedes; few very fine and fine vesicular and tubular pores; common fine and medium prominent yellowish brown (10YR 5/4) and few fine prominent strong brown (7.5YR 4/6) masses that have accumulated iron and are in the matrix; 2 percent siltstone channers; very strongly acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: 50 to 80 inches

Depth to paralithic contact: 60 to 90 inches

Kind of rock fragments: Dominantly strongly cemented or more resistant sandstone and siltstone channers

A, A/E, or E horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2 or 3 (A); hue of 10YR, value of 4 or 5, and chroma of 3 or 4 (E)

Texture—silt loam or channery silt loam

Content of rock fragments—2 to 30 percent

pH range—3.5 to 5.5

BE or Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8

Texture—silt loam, loam, or silty clay loam or the channery or very channery analogs of these textures

Content of rock fragments—5 to 34 percent; up to 50 percent rock fragments in individual layers of some pedons

pH range—3.5 to 5.5

2Bt horizon:

Color—hue of 5YR, 7.5YR, or 10YR; value of 5 or 6; and chroma of 1 to 8

Texture—silty clay loam, silty clay, or clay or the channery analogs of these textures

Content of rock fragments—2 to 20 percent

pH range—4.5 to 5.5

2BC or 2CBg horizon:

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 6

Texture—clay or silty clay

Content of rock fragments—0 to 5 percent

pH range—4.5 to 6.0

Vigo Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Aeric Glossaqualfs

Typical Pedon for the Series

Vigo silt loam, in a nearly level area in a cultivated field; 2,050 feet west and 250 feet north of the southeast corner of sec. 26, T. 10 N., R. 6 W.; Owen County, Indiana (fig. 24).

Ap—0 to 8 inches; grayish brown (10YR 5/2) silt loam, light gray (10YR 7/2) dry; friable; common very fine and fine roots throughout; common very fine and fine interstitial and tubular pores; slightly acid; abrupt smooth boundary.

Eg—8 to 16 inches; light brownish gray (2.5Y 6/2) silt loam, pale yellow (2.5Y 8/2) dry; moderate medium platy structure; friable; common very fine and fine roots throughout; common very fine and fine vesicular and tubular pores; common fine prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few fine and medium rounded iron and manganese concretions; slightly acid; clear irregular boundary.

E/Bt—16 to 22 inches; (E) 75 percent pale brown (10YR 6/3) silt loam; weak thick platy structure; friable; few very fine and fine roots throughout; few very fine and fine vesicular and tubular pores; many medium distinct light brownish gray (2.5Y 6/2) iron depletions and yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; (Bt) 25 percent strong brown (7.5YR 5/6) silty clay loam; weak very fine and fine columnar structure that parts to weak fine and medium subangular blocky structure; common distinct continuous gray (10YR 6/1) clay films on faces of pedes and in pores; many medium distinct light brownish gray (2.5Y 6/2) iron depletions in the matrix; few fine and medium rounded iron and manganese concretions; very strongly acid; gradual irregular boundary.

Bt/Eg—22 to 30 inches; (Bt) 80 percent pale brown (10YR 6/3) silty clay loam; moderate medium and coarse prismatic structure (prisms coarse at the base and medium at the top); firm; few fine and very fine roots throughout; few very fine and fine tubular pores; common distinct continuous gray (10YR 6/1) clay films on faces of pedes and in pores; many medium distinct light brownish gray (2.5Y 6/2) iron depletions and common fine prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few

fine and medium iron and manganese concretions; (Eg) 20 percent light gray (10YR 7/1) silt loam; $\frac{1}{8}$ - to $\frac{1}{2}$ -inch thick tongues between prisms; massive; friable; very strongly acid; gradual wavy boundary.

Bt—30 to 46 inches; yellowish brown (10YR 5/6) silt loam; moderate coarse prismatic structure; firm; few very fine and fine roots throughout; few very fine and fine tubular pores; many distinct continuous gray (10YR 6/1) clay films on faces of peds and in pores; many fine prominent light yellowish brown (10YR 6/4) masses that have accumulated iron and are in the matrix; common distinct continuous light gray (10YR 7/1) clay depletions on faces of peds; common fine and medium irregular iron and manganese concretions; very strongly acid; gradual wavy boundary.

2Btx1—46 to 53 inches; yellowish brown (10YR 5/6) silt loam; moderate coarse prismatic structure; friable; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds and in pores; many fine prominent light brownish gray (2.5Y 6/2) iron depletions and common distinct strong brown (7.5YR 5/8) masses that have accumulated iron and are in the matrix; common distinct discontinuous light gray (10YR 7/2) clay depletions on faces of peds and in pores; common medium irregular iron and manganese concretions; 1 percent pebbles; brittle; strongly acid; gradual wavy boundary.

2Btx2—53 to 64 inches; yellowish brown (10YR 5/6) silt loam; weak coarse prismatic structure; friable; many distinct continuous grayish brown (10YR 5/2) clay films on faces of peds and in pores; many medium prominent light brownish gray (2.5Y 6/2) iron depletions and common fine distinct strong brown (7.5YR 5/8) masses that have accumulated iron and are in the matrix; common distinct discontinuous light gray (10YR 7/2) clay depletions on faces of peds; few medium irregular iron and manganese concretions; 1 percent pebbles; brittle; moderately acid; clear wavy boundary.

2Btx3—64 to 70 inches; yellowish brown (10YR 5/6) silt loam; weak coarse prismatic structure; firm; common distinct discontinuous grayish brown (10YR 5/2) clay films on faces of peds and in pores; many medium prominent light brownish gray (2.5Y 6/2) iron depletions in the matrix; few distinct discontinuous light gray (10YR 7/2) clay depletions on faces of peds; common medium irregular iron and manganese concretions; 2

percent pebbles; moderately acid; clear wavy boundary.

3Btb—70 to 80 inches; strong brown (7.5YR 5/6) loam; moderate coarse prismatic structure; firm; common distinct continuous grayish brown (10YR 5/2) clay films on faces of peds and in pores; many medium prominent light brownish gray (2.5Y 6/2) iron depletions in the matrix; common medium irregular iron and manganese concretions; 2 percent pebbles; slightly acid.

Series Range in Characteristics

Depth to the base of the argillic horizon: More than 80 inches

Other features: The brittle part of the 2Btx horizon is restrictive to plant roots.

A or Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3

Texture—silt loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

Eg, BEg, or E/Bt horizon:

Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 or 3 (E and BE); hue of 10YR or 7.5YR, value of 5, and chroma of 4 to 6 (Bt)

Texture—silt loam (E and BE); silt loam or silty clay loam (Bt)

pH range—4.5 to 5.0 in nonlimed areas; ranges to 6.5 in limed areas in the upper part

Bt part of the Bt/Eg, Bt, or Btg horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 to 6

Texture—silt loam or silty clay loam

pH range—4.5 to 5.5

E part of the Bt/Eg, Bt, or Btg horizon:

Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2

Texture—silt loam

pH range—4.5 to 5.5

2Btx horizon:

Color—hue of 10YR or 7.5YR, value of 5, and chroma of 4 to 8

Texture—silt loam

Content of rock fragments—0 to 2 percent pebbles

pH range—4.5 to 6.0

3Btb horizon:

Color—hue of 10YR or 7.5YR, value of 5, and chroma of 6 to 8

Texture—loam or clay loam

Content of rock fragments—2 to 10 percent pebbles
pH range—6.1 to 7.3

Wea Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Argiudolls

Typical Pedon for the MLRA

Wea loam, sandy substratum, on a slope of 1 percent, in a cultivated field; 2,600 feet north and 1,100 feet west of the southeast corner of sec. 28, T. 11 N., R. 2 W.; Owen County, Indiana.

Ap—0 to 9 inches; dark brown (10YR 3/3) loam, brown (10YR 5/3) dry; moderate very fine granular structure; friable; common very fine roots; many very fine interstitial pores; 3 percent pebbles; neutral; abrupt smooth boundary.

A—9 to 15 inches; dark brown (10YR 3/3) sandy loam, brown (10YR 5/3) dry; moderate fine granular structure; friable; common very fine roots; many very fine interstitial and tubular pores; 10 percent pebbles; slightly acid; clear wavy boundary.

Bt1—15 to 22 inches; dark yellowish brown (10YR 3/4) sandy loam; weak very fine subangular blocky structure; friable; few very fine roots; common very fine tubular pores; common distinct discontinuous dark brown (10YR 3/3) clay films on faces of peds and in pores; 14 percent pebbles; slightly acid; clear wavy boundary.

Bt2—22 to 35 inches; dark brown (7.5YR 3/4) sandy loam; moderate fine subangular blocky structure; firm; few very fine roots; common very fine tubular pores; many distinct continuous dark brown (7.5YR 3/2) clay films on faces of peds and in pores; 12 percent pebbles; slightly acid; gradual wavy boundary.

2Bt3—35 to 40 inches; dark brown (7.5YR 3/4) gravelly coarse sandy loam; moderate medium subangular blocky structure; firm; few very fine tubular pores; many distinct continuous dark brown (7.5YR 3/2) clay films on faces of peds and in pores; 18 percent pebbles; neutral; clear wavy boundary.

2Bt4—40 to 43 inches; dark brown (7.5YR 3/2) gravelly sandy clay loam; moderate medium subangular blocky structure; friable; many faint continuous dark brown (7.5YR 3/2) clay films on faces of peds and in pores; 22 percent pebbles; slightly alkaline; abrupt irregular boundary.

3C—43 to 80 inches; brown (10YR 5/3) gravelly coarse sand; single grain; loose; strongly

effervescent; 30 percent pebbles; moderately alkaline.

MLRA Range in Characteristics

Depth to the base of the argillic horizon and carbonates: 40 to 70 inches

Thickness of the mollic epipedon: 10 to 20 inches

Size of rock fragments: Fine pebbles throughout the control section

A or Ap horizon:

Color—hue of 10YR, value of 2 or 3, and chroma of 2 or 3

Texture—loam or sandy loam

Content of rock fragments—0 to 14 percent pebbles

pH range—6.1 to 7.3

Bt horizon:

Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 4

Texture—sandy loam, loam, or gravelly sandy loam

Content of rock fragments—0 to 15 percent pebbles

pH range—6.1 to 7.3

2Bt or 2BCt horizon:

Color—hue of 5YR, 7.5YR, or 10YR; value of 3 to 5; and chroma of 2 to 4

Texture—gravelly loam, gravelly sandy loam, or gravelly sandy clay loam

Content of rock fragments—15 to 30 percent pebbles

pH range—6.1 to 7.8

3C horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4

Texture—coarse sand or sand or the gravelly analogs of these textures

Content of rock fragments—10 to 35 percent pebbles

pH range—7.4 to 8.4

Wellston Series

Taxonomic classification: Fine-silty, mixed active, mesic Ultic Hapludalfs

Taxadjunct features: The Wellston soils in map units Hickory-Wellston silt loams, 18 to 25 percent slopes, and Hickory-Wellston silt loams, 25 to 35 percent slopes, have a higher sand content in the upper part of the subsoil. This difference, however, does not affect the usefulness or behavior of the soils.

Typical Pedon for the MLRA

Wellston silt loam, on slope of 14 percent, in a field of hay; 500 feet north and 1,500 feet east of the southwest corner of sec. 36, T. 11 N., R. 5 W.; Owen County, Indiana.

Ap1—0 to 3 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; common fine roots; many very fine and fine interstitial and tubular pores; neutral; abrupt smooth boundary.

Ap2—3 to 8 inches; brown (10YR 4/3) silt loam; weak very fine subangular blocky structure; friable; many fine roots; common very fine and fine interstitial and tubular pores; neutral; clear wavy boundary.

Bt1—8 to 16 inches; dark yellowish brown (10YR 4/6) silt loam; weak fine and medium subangular blocky structure; friable; common fine roots; common fine tubular pores; common distinct discontinuous brown (7.5YR 4/4) clay films on faces of peds; extremely acid; gradual wavy boundary.

Bt2—16 to 23 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; few fine roots; common fine vesicular and tubular pores; many distinct discontinuous brown (7.5YR 4/4) clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—23 to 30 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; few fine roots; common fine vesicular and tubular pores; many distinct continuous dark brown (7.5YR 4/4) clay films on faces of peds and in pores; common discontinuous distinct pale brown (10YR 6/3) silt coatings on vertical faces of peds; 1 percent sandstone channers; very strongly acid; clear wavy boundary.

2Bt4—30 to 40 inches; yellowish brown (10YR 5/8) silt loam; moderate coarse subangular blocky structure; friable; few fine vesicular and tubular pores; many distinct continuous brown (7.5YR 4/4) clay films on faces of peds; 5 percent sandstone channers; very strongly acid; gradual wavy boundary.

2BC—40 to 45 inches; strong brown (7.5YR 5/6) channery loam; weak coarse subangular blocky structure; friable; few fine vesicular and tubular pores; 25 percent sandstone channers; very strongly acid; abrupt wavy boundary.

2CB—45 to 49 inches; strong brown (7.5YR 5/6) very channery sandy loam; massive; very friable; 50

percent sandstone channers; 25 percent parachanners (shale); very strongly acid; abrupt smooth boundary.

2Cr—49 to 60 inches; moderately cemented shale, interbedded with indurated sandstone.

MLRA Range in Characteristics

Depth to the base of the argillic horizon: 32 to 55 inches

Depth to paralithic contact: 40 to 60 inches

Thickness of the loess: 20 to 40 inches

A or Ap horizon:

Color—hue of 10YR, value of 2 to 4, and chroma of 1 or 2 (A); hue of 10YR, value of 4 or 5, and chroma of 3 to 6 (Ap)

Texture—silt loam

pH range—3.5 to 6.0 in nonlimed areas; ranges to 7.3 in limed areas

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8

Texture—silt loam or silty clay loam

pH range—3.5 to 5.5 in nonlimed areas; ranges to 6.0 in limed areas in the upper part

2Bt or 2BC horizon:

Color—hue of 10YR, 7.5YR, or 2.5Y; value of 4 to 6; and chroma of 4 to 8

Texture—loam, silt loam, sandy loam, fine sandy loam, or very fine sandy loam or the channery and very channery analogs of these textures

Content of rock fragments—2 to 15 percent in the upper part; ranges to 60 percent in the lower part

pH range—4.5 to 5.5

2CB or 2C horizon:

Color—hue of 2.5Y to 7.5YR, value of 5 to 7, and chroma of 4 to 8

Texture—channery to extremely channery analogs of loam, sandy loam, fine sandy loam, very fine sandy loam, clay loam, or sandy clay loam

Content of rock fragments—15 to 80 percent

pH range—4.5 to 5.5

Whitaker Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Aeric Endoaqualfs

Typical Pedon for the Series

Whitaker loam, in a nearly level area, in a cultivated field; 1,000 feet north and 2,100 feet west of the

southeast corner of sec. 11, T. 34 N., R. 3 E.; Marshall County, Indiana.

- Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; weak medium granular structure; friable; many fine roots; neutral; abrupt smooth boundary.
- E—9 to 17 inches; brown (10YR 5/3) loam; moderate medium subangular blocky structure; friable; common fine roots; common medium prominent yellowish brown (10YR 5/8) masses in which iron has accumulated and common medium faint light gray (10YR 6/2) iron depletions are in the matrix; slightly acid; clear wavy boundary.
- Btg1—17 to 27 inches; grayish brown (10YR 5/2) clay loam; moderate medium subangular blocky structure; firm; many distinct continuous gray (10YR 5/1) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/8) masses that have accumulated iron and are in the matrix; common fine black (10YR 2/1) iron and manganese concretions; 2 percent fine gravel; strongly acid; gradual wavy boundary.
- Btg2—27 to 39 inches; grayish brown (10YR 5/2) sandy clay loam; moderate medium subangular blocky structure; firm; many distinct discontinuous gray (10YR 5/1) clay films on faces of peds; many medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine black (10YR 2/1) iron and manganese concretions; 2 percent fine gravel; moderately acid; clear wavy boundary.
- BC—39 to 48 inches; dark yellowish brown (10YR 4/4) sandy loam; weak coarse subangular blocky structure; friable; common medium distinct gray (10YR 5/1) iron depletions in the matrix; slightly acid; clear wavy boundary.
- C—48 to 60 inches; brown (10YR 5/3) stratified silt loam, loam and thin strata of loamy sand; massive; friable; common fine faint grayish brown (10YR 5/2) iron depletions in the matrix; strongly effervescent; moderately alkaline.

Series Range in Characteristics

Depth to the base of the argillic horizon: 32 to 60 inches

Content of rock fragments: 0 to 5 percent fine gravel

Ap horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 2 or 3

Texture—loam

Content of rock fragments—0 to 5 percent pebbles
pH range—5.6 to 7.3

E or BE horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3

Texture—loam

pH range—5.6 to 6.5

Btg, Bt, or BC horizon (where present):

Color—hue of 7.5YR, 10YR, or 2.5Y; value of 4 to 6; and chroma of 1 to 6

Texture—loam, sandy loam, clay loam, or sandy clay loam

Content of rock fragments—0 to 5 percent pebbles
pH range—5.1 to 6.0 in the upper part; ranges to 7.8 in the lower part

C horizon:

Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 6

Texture—stratified loam, silt loam, sandy loam, fine sandy loam, or very fine sandy loam; strata of coarse sandy loam, loamy coarse sand, coarse sand, sand, loamy fine sand, or loamy sand

Content of rock fragments—0 to 14 percent pebbles
pH range—6.1 to 8.4

Wilbur Series

Taxonomic classification: Coarse-silty, mixed, superactive, mesic Fluvaqueptic Eutrudepts

Typical Pedon for the Series

Wilbur silt loam, in a nearly level area in a cultivated field; 2,140 feet north and 1,320 feet east of the southwest corner of donation 99, T. 1 S., R. 10 W.; Gibson County, Indiana.

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; neutral; clear smooth boundary.

Bw1—7 to 17 inches; dark yellowish brown (10YR 4/4) silt loam; few fine distinct brown (10YR 5/3) mottles; weak fine subangular blocky structure; friable; few fine roots; neutral; gradual smooth boundary.

Bw2—17 to 32 inches; brown (10YR 5/3) silt loam; weak medium subangular blocky structure; friable; few fine faint grayish brown (10YR 5/2) iron depletions in the matrix; neutral; clear smooth boundary.

Cg—32 to 60 inches; light brownish gray (10YR 6/2) silt loam; massive; friable; many fine prominent brown (7.5YR 4/4) masses that have accumulated

iron and are in the matrix; common dark yellowish brown iron and manganese stains lining pores; neutral.

Series Range in Characteristics

A or Ap horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4

Texture—silt loam

pH range—5.6 to 7.3; depends upon liming history

Bw horizon:

Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6

Texture—silt loam

pH range—5.6 to 7.8

C or Cg horizon:

Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 6

Texture—silt loam; loam and thin strata of fine sandy loam or sandy loam below a depth of 40 inches

pH range—5.6 to 7.8

Wilhite Series

Taxonomic classification: Fine, mixed, active, nonacid, mesic Fluvaquentic Endoaquepts

Typical Pedon for the Series

Wilhite silty clay loam, on a slope of 0.5 percent, in a cultivated field; 1,380 feet south and 1,400 feet east of the northwest corner of sec. 19, T. 1 N., R. 8 W.; Pike County, Indiana.

Ap—0 to 9 inches; dark gray (10YR 4/1) silty clay loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; firm; common fine roots; neutral; abrupt smooth boundary.

BA—9 to 17 inches; dark gray (10YR 4/1) silty clay loam; moderate medium subangular blocky structure; firm; common fine roots; few fine faint brown (10YR 4/3) masses that have accumulated iron and are in the matrix; moderately acid; clear smooth boundary.

Bg1—17 to 26 inches; gray (10YR 5/1) silty clay; weak medium prismatic structure parting to moderate coarse angular blocky; very firm; few fine roots; common medium distinct yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; krotovinas about 1 foot to 1½ feet apart filled with dark gray (10YR 4/1) silty clay loam; strongly acid; clear smooth boundary.

Bg2—26 to 38 inches; gray (10YR 5/1) silty clay; weak medium prismatic structure parting to moderate coarse angular blocky; very firm; few fine roots; thin discontinuous dark gray (10YR 4/1) organic coatings on faces of peds; many medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; krotovinas about 1 foot to 1½ feet apart filled with dark gray (10YR 4/1) silty clay loam; strongly acid; gradual smooth boundary.

BCg—38 to 47 inches; dark gray (10YR 4/1) silty clay; weak coarse subangular blocky structure; very firm; common distinct discontinuous gray (N 5/0) organic coatings on faces of peds; many medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; krotovinas about 1 foot to 1½ feet apart filled with dark gray (10YR 4/1) silty clay loam; strongly acid; gradual smooth boundary.

Cg—47 to 60 inches; gray (10YR 6/1) and grayish brown (2.5Y 5/2) silty clay; massive; very firm; common medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; many fine and medium black (10YR 2/1) iron-manganese concretions; krotovinas about 1 foot to 1½ feet apart filled with dark gray (10YR 4/1) silty clay loam; moderately acid.

Series Range in Characteristics

A or Ap horizon:

Color—hue of 10YR to 5Y, value of 4 or 5, and chroma of 1 to 3

Texture—silty clay loam or silty clay

pH range—5.6 to 6.5 in nonlimed areas; ranges to 7.3 in limed areas

Bg, BAg, or BCg horizon:

Color—hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 or less

Texture—silty clay loam or silty clay

pH range—5.1 to 7.3

Cg horizon:

Color—hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2

Texture—silty clay loam or silty clay

pH range—5.6 to 7.3

Wirt Series

Taxonomic classification: Coarse-loamy, mixed, superactive, mesic Dystric Fluventic Eutrudepts

Typical Pedon for the Series

Wirt loam, in a nearly level area in a pasture field; 30 feet south and 600 feet west of the northeast corner of sec. 24, T. 3 N., R. 8 E.; Jefferson County, Indiana.

Ap—0 to 8 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; moderate medium granular structure, grading to weak thin platy in the lower part; friable; many fine roots; neutral; clear smooth boundary.

Bw1—8 to 15 inches; brown (10YR 4/3) silt loam; common fine distinct light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; friable; common fine roots; few distinct discontinuous dark brown (10YR 3/3) organic coatings on faces of peds; neutral; gradual smooth boundary.

Bw2—15 to 22 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; few fine roots; many distinct discontinuous dark brown (10YR 3/3) organic coatings on faces of peds; neutral; gradual wavy boundary.

Bw3—22 to 38 inches; dark yellowish brown (10YR 4/6) loam; few fine distinct light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; friable; many distinct discontinuous dark brown (10YR 3/3) organic coatings on faces of peds; neutral; gradual wavy boundary.

C1—38 to 50 inches; dark yellowish brown (10YR 4/6) sandy loam; common fine distinct pale brown (10YR 6/3) mottles; massive; friable; 1 percent pebbles; neutral; gradual wavy boundary.

C2—50 to 60 inches; dark yellowish brown (10YR 4/4) gravelly sandy loam; massive; friable; 25 percent pebbles; neutral.

Series Range in Characteristics

A or Ap horizon:

Color—hue of 10YR, value of 2 or 3, and chroma of 2 or 3 (A); hue of 10YR, value of 3 to 5, and chroma of 3 or 4 (Ap)

Texture—silt loam, loam, fine sandy loam, or very fine sandy loam

pH range—5.6 to 7.3

Bw or BC horizon:

Color—hue of 10YR, value of 3 to 5, and chroma of 3 to 6

Texture—loam, silt loam, sandy loam, fine sandy loam, or very fine sandy loam

Content of rock fragments—0 to 14 percent pebbles

pH range—5.6 to 7.3

C horizon:

Color—hue of 10YR, value of 3 to 5, and chroma of 3 to 6

Texture—loam, fine sandy loam, or sandy loam; strata of loamy fine sand or loamy sand or the gravelly and very gravelly analogs of their textures below a depth of 40 inches

Content of rock fragments—0 to 35 percent pebbles

pH range—5.6 to 7.8

Zanesville Series

Taxonomic classification: Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs

Typical Pedon for the MLRA

Zanesville, soft bedrock substratum, silt loam, on a slope of 9 percent, in a pasture; 175 feet north and 1,400 feet east of the southwest corner of sec. 36, T. 11 N., R. 5 W.; Owen County, Indiana.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, light yellowish brown (10YR 6/4) dry; weak fine granular structure; friable; many very fine and fine roots; many very fine interstitial pores; neutral; abrupt smooth boundary.

Bt1—8 to 13 inches; yellowish brown (10YR 5/6) silt loam; weak very fine subangular blocky structure; friable; common very fine and fine roots; common very fine tubular pores; few discontinuous faint dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; moderately acid; clear wavy boundary.

Bt2—13 to 20 inches; yellowish brown (10YR 5/6) silt loam; moderate fine subangular blocky structure; friable; common very fine and fine roots; common very fine tubular pores; common distinct continuous brown (7.5YR 5/4) clay films on faces of peds and in pores; pale brown (10YR 6/3) silt coatings on vertical and horizontal faces of peds; very strongly acid; clear irregular boundary.

Bt3—20 to 26 inches; yellowish brown (10YR 5/6) silty clay loam; common fine distinct pale brown (10YR 6/3) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine and fine roots; common very fine vesicular and tubular pores; many distinct continuous brown (7.5YR 5/4) clay films on faces of peds and in pores; pale brown (10YR 6/3) silt coatings on vertical and horizontal faces of peds; very strongly acid; gradual wavy boundary.

Btx1—26 to 33 inches; yellowish brown (10YR 5/6) silty clay loam; strong coarse prismatic structure;

very firm; few very fine and fine roots between peds; few very fine vesicular and tubular pores; many distinct continuous brown (7.5YR 5/4) clay films on faces of peds and in pores; light yellowish brown (10YR 6/4) silt coatings on vertical and horizontal faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; brittle; very strongly acid; gradual wavy boundary.

Btx2—33 to 39 inches; brown (7.5YR 5/4) silt loam; strong very coarse prismatic structure parting to strong medium platy; very firm; few very fine and fine roots between peds; few very fine vesicular and tubular pores; many faint continuous brown (7.5YR 4/4) clay films on faces of peds and in pores; pale brown (10YR 6/3) silt coatings on vertical and horizontal faces of peds; common fine prominent light brownish gray (10YR 6/2) iron depletions in the matrix; brittle; very strongly acid; clear wavy boundary.

2Btx3—39 to 50 inches; yellowish brown (10YR 5/6) silt loam; strong very coarse prismatic structure parting to strong medium platy; very firm; few very fine vesicular and tubular pores; many continuous distinct brown (7.5YR 4/4) clay films on faces of peds and in pores; light brownish gray (10YR 6/2) clay depletions on vertical faces of peds; common fine prominent light brownish gray (10YR 6/2) iron depletions in the matrix; 2 percent sandstone channers; brittle; very strongly acid; gradual wavy boundary.

3Bt1—50 to 56 inches; dark yellowish brown (10YR 4/6) loam; weak medium subangular blocky structure; firm; few patchy distinct brown (7.5YR 4/4) clay films on faces of peds; common fine prominent light brownish gray (10YR 6/2) iron depletions in the matrix; 7 percent sandstone channers; very strongly acid; clear wavy boundary.

3Bt2—56 to 68 inches; reddish yellow (7.5YR 6/6) clay; moderate fine angular blocky structure; very firm; common fine prominent light brownish gray (2.5Y 6/2) iron depletions in the matrix; very strongly acid; abrupt smooth boundary.

3Cr—68 to 80 inches; interbedded moderately cemented shale and siltstone and very strongly cemented sandstone.

MLRA Range in Characteristics

Depth to the base of the argillic horizon: 40 to 70 inches

Thickness of the loess: 24 to 45 inches

Depth to the Btx horizon: 14 to 30 inches

Depth to a fragipan: 20 to 40 inches

A or Ap horizon:

Color—hue of 10YR, value of 3 or 4, and chroma of 2 or 3 (A); hue of 10YR, value of 4 or 5, and chroma of 3 or 4 (Ap)

Texture—silt loam

pH range—4.5 to 5.5 in nonlimed areas; ranges to 7.3 in limed areas

Bt horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6

Texture—silt loam or silty clay loam

pH range—4.5 to 6.0

Btx or 2Btx horizon:

Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6

Texture—silt loam or silty clay loam

Content of rock fragments—0 to 5 percent channers

pH range—4.5 to 5.5

3Bt or BC horizon:

Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8

Texture—silt loam, silty clay loam, loam, sandy loam, sandy clay loam, or clay loam or the channery to extremely channery analogs of these textures; silty clay or clay

Content of rock fragments—5 to 30 percent in the upper part; ranges to 80 percent in the lower part

pH range—4.5 to 5.5

Formation of the Soils

This section describes the major factors of soil formation that have affected the soils in Owen County. The processes of soil formation also are described.

Factors of Soil Formation

Soil forms through processes acting on deposited or accumulated geologic material. The characteristics of a soil at any given point are determined by the physical and mineralogical composition of the parent material; the climate under which the soil material was deposited and has existed since deposition; the plant and animal life associated with the soil; the relief, or lay of the land; and the length of time that the forces of soil formation have acted on the soil material (Jenny, 1941).

Parent material greatly affects the kind of soil profile that forms. Climate and plant and animal life, chiefly plants, are active factors of soil formation. They act upon the parent material that has accumulated through the weathering of rocks and slowly change it to a natural body that has genetically related horizons. The effects of climate and plant and animal life are influenced by relief. Finally, time is needed for the transformation of the parent material into a soil. Some time is always required for the differentiation of soil horizons.

The factors of soil formation are so closely interrelated in their effects on the soil that few generalizations can be made regarding the effects of any one factor unless conditions are specified for the other four.

Parent Material

Henry H. Gray, head stratigrapher—retired, Geology Section, Geological Survey, Indiana Department of Natural Resources, helped to prepare this section.

Parent material is the unconsolidated mass in which a soil forms. It ranges from residuum from limestone; sandstone; or shale to clay, sand, or silt deposited by glaciers, water, or wind. Some soils formed in two or more of these kinds of material. For example, the upper part of Parke soils formed in loess and the lower part formed in glacial outwash.

The landscapes and soils of Owen County are the result of the action of weather and erosion on the geologic materials that underlie the county. These materials are of two types—bedrock and unconsolidated (mainly glacial) deposits—and they belong to two chapters of earth history that are greatly different in time. The bedrock was formed in very ancient seas and streams and dates from the Mississippian and Pennsylvanian Periods of geological time, or some 300 to 350 million years ago. Most of the unconsolidated deposits were formed during the Pleistocene Epoch (the so-called Ice Age) which began about 2 million years ago, ended only 10,000 years ago.

Climate

Climate largely determines the kind of plant and animal life on and in the soil. It also determines the amount of water available for the weathering of minerals and the translocation of soil material. Temperature determines the rate of chemical reactions in the soil. These effects tend to be uniform in relatively small areas, such as those the size of a county.

The climate in Owen County is generally cool and moist in winter and hot and humid in summer. It is presumably similar to the climate that prevailed when the soils formed. The climate is nearly uniform throughout the county, and thus differences among the soils in the county are not the result of varied climatic conditions.

Plant and Animal Life

Plants have been one of the principal organisms influencing the soils in Owen County. Bacteria, fungi, earthworms, and human activities also have affected the formation of the soils. The chief contribution of plant and animal life is the addition of organic matter and nitrogen to the soil. The kind of organic material in and on the soil depends on the kind of native plants that grew on the soil. The remains of these plants accumulated in the surface layer, decayed, and eventually became humus. The roots of the plants

provided channels for the downward movement of water and air through the soil, and they added organic matter as they decayed. Bacteria and soil micro-organisms helped to break down the organic matter into plant nutrients.

The native vegetation in Owen County was mainly deciduous, mixed hardwood trees. Differences in natural soil drainage and minor variations in the kind of parent material affected the composition of the vegetative cover. Well drained soils, such as Pike, Princeton, and Stinesville soils, supported yellow-poplar, white oak, red oak, hickory, elm, and sugar maple. Wet soils, such as Hoosierville, and Peoga soils, supported primarily sweetgum, pin oak, beech, and soft maple.

Relief

Relief, or topography, has had a marked effect on the soils in Owen County through its influence on natural soil drainage, erosion, runoff, plant cover, and soil temperature. Some soils formed in the same type of parent material differ mainly in drainage characteristics because of the influence of relief.

Runoff is most rapid on the steepest slopes. Water is temporarily ponded in the low, depressional areas. The greater the runoff rate, the greater the hazard of water erosion.

Through its effect on aeration in the soil, drainage determines the major color of the soil. Water and air move freely through most well drained soils and very slowly through very poorly drained soils. In well aerated soils, such as Crider and Ryker soils, the iron and aluminum compounds that give soils their color are reddish or brownish and are oxidized. Bonnie and other poorly aerated soils that are saturated for long periods commonly are dominantly gray and have reddish and brownish masses in which iron has accumulated. The soils are gray because the iron compounds have been reduced or they have been removed from the profile.

Soils on west- and south-facing slopes generally have a warmer soil temperature than soils on north- and east-facing slopes.

Time

Generally, a long time is required for the processes of soil formation to result in the formation of distinct soil horizons. Differences in the length of time that the parent material has been in place and the amount of disturbance, such as erosion or

deposition, are commonly reflected in the degree of profile development.

The soils in Owen County range from immature to mature. Ava soils and other soils that formed in loess and glacial till, and Crider, Wellston, and other soils that formed in loess over material weathered from bedrock, have been exposed to the soil-forming factors long enough for the development of distinct horizons. Moundhaven, Stonelick, and other soils that formed in recent alluvium, however, have not been in place long enough for this kind of development. Some steep soils, such as Tipsaw soils, have been exposed to the soil-forming factors for a long time but do not have distinct horizons. Most of the precipitation that has fallen on these soils has run off the surface and thus has not moved through the profile. Consequently, very little weathering of minerals or translocation of soil material has occurred.

The Mississippian Period in Indiana was a time of warm, near tropical seas, and the deposits of those seas became limestone, shale, and sandstone. The limestone is fossiliferous and represents open, clear water with abundant bottom life. The shale and sandstone represent near shore deposits of beaches, bays, lagoons, and estuaries. Limestone which underlies the Crider, Haggatt, and Stinesville soils is widespread in the eastern part of the county and underlies valleys in the central part (fig. 25). Mississippian shale and sandstone cap hilltops in southeastern Owen County and underlie slopes in the central part of the county.

Rocks deposited during the Pennsylvanian Period include sandstone, shale, and coal. These rock deposits represent areas of sand and mud on extensive delta plains near the shore. In places, there were broad, swampy areas in which plants grew luxuriantly, died, and partially decayed to form peat. After the peat was buried, it was compressed and altered to form coal. Rocks of Pennsylvanian age cap hills in the central part of the county and are widespread in the western part. Adyeville, Tipsaw, Tulip, Wellston, and Zanesville soils are in these areas.

All of these sedimentary rocks were deposited in an extensive downwarped area known as the Illinois Basin. This was a basin of deposition during Mississippian and Pennsylvanian time. With continued downwarping it remains as a structural basin today. Bedrock layers of Owen County, which originally were deposited in a nearly horizontal position, now dip gently to the west at about 25 to 35 feet per mile. Erosion has beveled the bedrock layers so that today the older rocks crop out in the east and the younger



Figure 25.—Fractured beds of limestone underlie an area of Haggatt soils.

rocks are present only in the west. Proof of this tilting is that wells drilled in eastern Owen County pass at a few hundred feet in depth through the same layers of rock that are surface outcrops in eastern Owen County.

For nearly 300 million years following the deposition of Pennsylvanian-age rocks, the bedrock of Owen County was subjected to weathering and erosion. Weathering, which includes such processes as frost action and solution, breaks down rocks both mechanically and chemically. As a result, sandstone again becomes sand, shale becomes mud, and limestone is dissolved. Erosion then carries away these products of weathering and a new cycle begins somewhere else.

When the glaciers first advanced into Owen County, perhaps about a million years ago, the landscapes of

the county were different only in detail from those of today. Glaciers can be powerful agents in erosion, but in this county they produced few erosional effects. Meltwater flowing from the glaciers, however, cut channels and rearranged existing stream patterns. There is much evidence of these changes, such as, the diversion of surface drainage near Cataract Lake. Owen County has encountered several occurrences of glaciers, with each successive glacial advance making its mark on the land, and in so doing, eliminating some of the evidence of earlier events.

Glaciers and their meltwaters also are agents of deposition. Over most of Owen County they left deposits as evidence of their activity. Only a few square miles in the southeastern corner of the county were not covered by the glaciers. Till, a compact mixture of pebbles, sand, silt, and clay was deposited

directly by the glaciers. Hickory soils formed mainly in glacial till. Sand and gravel, known as outwash, were deposited by meltwater streams, mainly in valleys but in places high on the hills because meltwater streams also flowed on top of and around the edge of the ice. Chetwynd and Gallimore soils formed mainly in outwash. Peoga and Pottersville soils developed in some areas in deposits of laminated silt and clay that were formed in lakes that no longer exist. Along the edges of some of the larger valleys, wind piled dune sand in which the Alvin and Bloomfield soils developed. Wind deposited blankets of silt, known as loess, covered most of the county. The youngest deposits include sand and silt in the valleys of present streams. McAdoo and Steff soils are examples of soils that developed in recently deposited materials. Piankeshaw soils formed in narrow valleys and at the base of steep, rocky slopes where the alluvium consists of deposits with a relatively high channery rock fragment content.

Erosion since glacial times has modified glacial features, but has been geologically minor. Windblown silt has eroded from the hillslopes, mainly as a consequence of removal of forest cover, stream valleys have deepened, and small landslides and rockslides have occurred where streams undercut their banks. All of these processes can be accelerated by the activities of man. And as these geologic processes occur today, as in the past, they continue to create an endless natural cycle of weathering, erosion, and deposition by wind, water, and ice.

Processes of Soil Formation

Several processes have been involved in the formation of the soils in Owen County. These processes are additions, such as organic matter; losses, or dissolution, transfer, and removal of

compounds, such as calcium carbonates and bases; the liberation and translocation of silicate clay minerals; and transformation, such as reduction and transfer of iron or weathering of silicate clays. In most soils in the county, more than one of these processes have helped to differentiate horizons.

Some organic matter has accumulated in the surface layer of all of the soils in the county. The content of organic matter is low or moderately low in the soils in Owen County.

Carbonates and bases have been leached from the upper horizons of nearly all of the soils in the county. Leaching of carbonates and salts preceded the translocation of silicate clay minerals. Most of the carbonates and the salts have been leached from the A and B horizons of well drained soils. Even in the wet soils, some leaching is indicated by the absence of carbonates and by an acid soil reaction. Leaching of wet soils is slower because of a high water table or the slow movement of water through the profile.

Clay accumulates in pores and on the faces of structural units along which water moves. The leaching of bases and the subsequent translocation of silicate clays are among the more important processes of horizon differentiation in the county. Dubois soils are examples of soils in which translocated silicate clay has accumulated in the Bt horizon.

Gleying, or the reduction and transfer of iron, has occurred in all of the very poorly drained to somewhat poorly drained soils. In these naturally wet soils, this process has significantly affected horizon differentiation. A gray subsoil indicates the reduction and redistribution of an iron either from the upper horizons to lower horizons, or by the removal of iron from the soil profile. Mottles (now referred to as redoximorphic features), which are in soil horizons that have been reduced, indicate the segregation of iron oxide.

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Glossary

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp. A flood plain landform. Extensive, marshy, or swampy, depressed areas of flood plains between natural levees and valley sides of terraces.

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bedrock-floored plain. An extensive nearly level to gently rolling or moderately sloping area that is underlain by hard bedrock and has a slope of 0 to 8 percent.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum. Two sequences of soil horizons, each of

which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout. A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

Board foot. A unit of measure of the wood in lumber, logs, or trees. The amount of wood in a board one foot wide, one foot long, and one inch thick before finishing.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100

grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Cement rock. Shaly limestone used in the manufacture of cement.

Channeled. Refers to a drainage area in which natural meandering or repeated branching and convergence of a streambed have created deeply incised cuts, either active or abandoned, in alluvial material.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clayey soil. Texture group consisting of silty clay, sandy clay, and clay soil textures.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clearcut. A method of forest harvesting that removes the entire stand of trees in one cutting. Reproduction is achieved artificially or by natural seeding from adjacent stands.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Clod. A compact, coherent mass of soil varying in size, usually produced by plowing, digging, or other mechanical means, especially when these operations are performed on soils that are either too wet or too dry and usually formed by compression, or breaking off from a larger unit.

Closed depression. A low area completely surrounded by higher ground and having no natural outlet.

Coarse fragments. Mineral or rock particles larger than 2 millimeters in diameter.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Codominant trees. Trees whose crowns form the general level of the forest canopy and that receive full light from above but comparatively little from the sides.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Commercial forest. Forestland capable of producing 20 cubic feet or more per acre per year at the culmination of mean annual increment.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the

soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Consolidated sandstone. Sandstone that disperses within a few hours when fragments are placed in water. The fragments are extremely hard or very hard when dry, are not easily crushed, and cannot be textured by the usual field method.

Consolidated shale. Shale that disperses within a few hours when fragments are placed in water. The fragments are extremely hard or very hard when dry and are not easily crushed.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI).

The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deep soil. A soil that is 40 to 60 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Delta. A body of alluvium having a surface that is nearly flat and fan shaped; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Dominant trees. Trees whose crowns form the general level of the forest canopy and that receive full light from above and from the sides.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to

those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. An area of ground at a lower elevation than the surrounding ground and in which water collects and is drained to a closed depression or lake or to a drainageway at a lower elevation. A drainageway may or may not have distinctly incised channels at its upper reaches or throughout its course.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune. A low mound, ridge, bank, or hill of loose, windblown, granular material (generally sand), either bare or covered with vegetation, capable of movement from place to place but always retaining its characteristic shape.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.
Erosion (geologic). Erosion caused by geologic

processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Even aged. Refers to a stand of trees in which only small differences in age occur between the individuals. A range of 20 years is allowed.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan terrace. A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. Area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flat. A general term for a level or nearly level surface or small area of land marked by little or no relief.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Flood plain step. An essentially flat, alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface frequently modified by scour and/or deposition. May occur individually or as a series of steps.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Footslope. The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragile (in tables). A soil that is easily damaged by use or disturbance.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glacial drift. Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash. Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glacial till. Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciated uplands. Land areas that were previously covered by continental or alpine glaciers and that are at a higher elevation than the flood plain.

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head out. To form a flower head.

Heavy metal. Inorganic substances that are solid at ordinary temperatures and are not soluble in water. They form oxides and hydroxides that are basic. Examples are copper, iron, cadmium, zinc, manganese, lead, and arsenic.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or

browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the

soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interdune. A relatively flat surface, whether sand-free or sand-covered, between dunes.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:
Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Kame. An irregular, short ridge or hill of stratified glacial drift.

Kame terrace. A terracelike ridge consisting of stratified sand and gravel that were deposited by a meltwater stream flowing between a melting glacier and a higher valley wall or lateral moraine and that remained after the disappearance of the ice. It is commonly pitted with kettles and has an irregular ice-contact slope.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain. A surface marking the floor of an extinct lake, filled in by well sorted, stratified sediments.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loamy soil. Texture group consisting of coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, and silty clay loam soil textures.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Major land resource areas (MLRA). Geographically associated land resource areas designated by Arabic numbers and identified by a descriptive geographic name.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mean annual increment (MAI). The average annual increase in volume of a tree during the entire life of the tree.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Merchantable trees. Trees that are of sufficient size to be economically processed into wood products.

Metamorphic rock. Rock of any origin altered in

mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Microhigh. An area that is 2 to 12 inches higher than the adjacent microlow.

Microlow. An area that is 2 to 12 inches lower than the adjacent microhigh.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately deep soil. A soil that is 20 to 40 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine. An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Observed rooting depth. Depth to which roots have been observed to penetrate.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Overstory. The trees in a forest that form the upper crown cover.

Oxbow. The horseshoe-shaped channel of a former meander, remaining after the stream formed a cutoff across a narrow meander neck.

Paleosol. A soil that formed on a landscape in the past with distinctive morphological features resulting from a soil-forming environment that no longer exists at the site. The former pedogenic process was either altered because of external environmental change or interrupted by burial.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

Pararock fragments. Fragments of paralithic materials, having a diameter of 2 millimeters or more; for example, parachanners and paraflagstones.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedimentation. A thin layer of alluvial material that mantles an erosion surface and has been transported to its present position from higher lying areas of the erosion surface.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Percolates slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed

depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Quartzite, metamorphic. Rock consisting mainly of quartz that formed through recrystallization of quartz-rich sandstone or chert.

Quartzite, sedimentary. Very hard but unmetamorphosed sandstone consisting chiefly of quartz grains.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0

Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Regeneration. The new growth of a natural plant community, developing from seed.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relict stream terrace. One of a series of platforms in or adjacent to a stream valley that formed prior to the current stream system.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Riser. The relatively short, steeply sloping area below a terrace tread that grades to a lower terrace tread or base level.

Riverwash. Unstable areas of sandy, silty, clayey, or gravelly sediments. These areas are flooded, washed, and reworked by rivers so frequently that they support little or no vegetation.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. Exposures of bare bedrock other than lava flows and rock-lined pits.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sandy soil. Texture group consisting of sand and loamy sand soil textures.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Sawlogs. Logs of suitable size and quality for the production of lumber.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Scarp. An escarpment, cliff, or steep slope of some extent along the margin of a plateau, mesa, terrace, or structural bench. A scarp may be of any height.

Scribner's log rule. A method of estimating the number of board feet that can be cut from a log of a given diameter and length.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Sedimentary plain. An extensive nearly level to gently rolling or moderately sloping area that is underlain by sedimentary bedrock and that has a slope of 0 to 8 percent.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed

from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Semiconsolidated sedimentary beds. Soft geologic sediments that disperse when fragments are placed in water. The fragments are hard or very hard when dry. Determining the texture by the usual field method is difficult.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Shallow soil. A soil that is 10 to 20 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shelterwood system. A forest management system requiring the removal of a stand in a series of cuts so that regeneration occurs under a partial canopy. After regeneration, a final cut removes the shelterwood and allows the stand to develop in the open as an even-aged stand. The system is well suited to sites where shelter is needed for regeneration, and it can aid regeneration of the more intolerant tree species in a stand.

Shoulder slope. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles

that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site class. A grouping of site indexes into five to seven production capability levels. Each level can be represented by a site curve.

Site curve (50-year). A set of related curves on a graph that shows the average height of dominant or dominant and codominant trees for the range of ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant or dominant and codominant trees that are 50 years old or are 50 years old at breast height.

Site curve (100-year). A set of related curves on a graph that shows the average height of dominant or dominant and codominant trees for a range of ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant or dominant and codominant trees that are 100 years old or are 100 years old at breast height.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Skid trails. Pathways along which logs are dragged to a common site for loading onto a logging truck.

Slash. The branches, bark, treetops, reject logs, and broken or uprooted trees left on the ground after logging.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or

clayey, is slippery when wet, and is low in productivity.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Level	0 to 1 percent
Nearly level	0 to 3 percent
Very gently sloping	1 to 3 percent
Gently sloping	2 to 6 percent
Moderately sloping	6 to 12 percent
Strongly sloping	12 to 18 percent
Moderately steep	18 to 25 percent
Steep	25 to 35 percent
Very steep	35 percent and higher

Classes for complex slopes are as follows:

Level	0 to 1 percent
Nearly level	0 to 3 percent
Gently undulating	1 to 4 percent
Undulating	1 to 8 percent
Gently rolling	4 to 10 percent
Rolling	4 to 16 percent
Hilly	10 to 30 percent
Steep	20 to 60 percent
Very steep	45 percent and higher

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil quality. Soil quality is the fitness of a specific kind of soil to function within its surroundings, support

plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Species. A single, distinct kind of plant or animal having certain distinguishing characteristics.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Strath terrace. A type of stream terrace, formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream channel. The hollow bed where a natural stream of surface water flows or may flow; the deepest or central part of the bed, formed by the main current and covered more or less continuously by water.

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel. It originally formed near the level of the stream and is the dissected remnants of an abandoned flood plain, streambed, or valley floor that were produced during a former stage of erosion or deposition.

Strippcropping. Growing crops in a systematic arrangement of strips or bands that provide

vegetative barriers to wind erosion and water erosion.

Structural bench. A platform-like, nearly level to gently inclined erosional surface developed on resistant strata in areas where valleys are cut in alternating strong and weak layers with an essentially horizontal attitude. Structural benches are bedrock controlled, and in contrast to stream terraces, have no geomorphic implication of former, partial erosion cycles and base-level controls, nor do they represent a stage of flood-plain development following an episode of valley trenching.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine. A belt of thick glacial drift that generally marks the termination of important glacial advances.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand*, *loamy sand*, *sandy loam*, *loam*, *silt loam*, *silt*, *sandy clay loam*, *clay loam*, *silty clay loam*, *sandy clay*, *silty clay*, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Till plain. An extensive area of nearly level to undulating soils underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Toxicity (in tables). Excessive amount of toxic substances, such as sodium or sulfur, that severely hinder establishment of vegetation or severely restrict plant growth.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Trafficability. The degree to which a soil is capable of supporting vehicular traffic across a wide range in soil moisture conditions.

Tread. The relatively flat terrace surface that was cut or built by stream or wave action.

Understory. Any plants in a forest community that grow to a height of less than 5 feet.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley. An elongated depressional area primarily developed by stream action.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Very deep soil. A soil that is more than 60 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Very shallow soil. A soil that is less than 10 inches deep over bedrock or to other material that restricts the penetration of plant roots.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Waterspreading. Diverting runoff from natural channels by means of a system of dams, dikes, or ditches and spreading it over relatively flat surfaces.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed

over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Wind erodibility index. The potential annual wind erosion for a given soil under a given set of field conditions. This factor is expressed as the average annual soil loss in tons per acre per year from a field area that is isolated, unsheltered, wide bare, smooth, level, loose, and noncrusted.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables



Table 1.--Temperature and Precipitation
(Recorded in the period 1961-90 at Spencer, Indiana)

Month	Temperature						Precipitation					
	Average daily maximum	Average daily minimum	Average	2 yrs in 10 will have--		Average number of growing degree days*	Average	2 yrs in 10 will have--		Average number of days with 0.10 inch or more	Average	
				Maximum temperature higher than--	Minimum temperature lower than--			Less than--	More than--			
°F	°F	°F	°F	°F	Units	In	In	In		In		
January-----	35.5	15.8	25.7	65	-15	21	2.36	1.07	3.46	5	4.4	
February----	40.1	18.5	29.3	68	-9	30	2.53	1.29	3.61	5	4.6	
March-----	51.9	29.3	40.6	79	5	144	4.16	2.54	5.60	7	3.2	
April-----	64.1	38.9	51.5	85	20	359	4.01	2.51	5.36	7	0.2	
May-----	74.3	48.8	61.6	91	30	668	4.81	2.64	6.73	7	0.0	
June-----	82.8	58.6	70.7	95	42	900	4.01	2.30	5.53	6	0.0	
July-----	86.3	62.8	74.5	97	48	1035	4.92	2.63	6.93	6	0.0	
August-----	84.5	60.5	72.5	96	46	1007	4.29	2.18	6.14	6	0.0	
September---	78.4	52.9	65.7	93	35	769	3.15	1.37	4.67	5	0.0	
October-----	66.9	40.0	53.5	86	22	423	2.87	1.51	4.07	5	0.0	
November----	53.4	32.1	42.8	77	12	165	3.70	1.96	5.23	6	1.1	
December----	40.4	22.0	31.2	67	-8	44	3.51	1.80	5.00	6	3.4	
Yearly:												
Average---	63.2	40.0	51.6	---	---	---	---	---	---	---	---	
Extreme---	101	-26	---	98	-18	---	---	---	---	---	---	
Total-----	---	---	---	---	---	5,567	44.32	37.59	50.45	71	16.9	

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.--Freeze Dates in Spring and Fall
(Recorded in the period 1961-90 at Spencer, Indiana)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 15	Apr. 29	May 15
2 year in 10 later than--	Apr. 10	Apr. 24	May 9
5 year in 10 later than--	Apr. 1	Apr. 14	Apr. 28
First freezing temperature in fall:			
1 yr in 10 earlier than--	Oct. 18	Oct. 9	Sept. 29
2 yr in 10 earlier than--	Oct. 23	Oct. 14	Oct. 3
5 yr in 10 earlier than--	Nov. 2	Oct. 24	Oct. 10

Table 3.--Growing Season
(Recorded for the period 1961-90 at Spencer, Indiana)

Probability	Daily minimum temperature during growing season		
	Number of days higher than 24 °F	Number of days higher than 28 °F	Number of days higher than 32 °F
9 years in 10	183	164	143
8 years in 10	189	171	150
5 years in 10	199	184	164
2 years in 10	210	197	177
1 year in 10	215	203	184

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AbgAU	Adrian muck, undrained, 0 to 1 percent slopes-----	46	*
AfeC	Alvin-Bloomfield loamy sands, 6 to 12 percent slopes-----	473	0.2
AfeD	Alvin-Bloomfield loamy sands, 12 to 18 percent slopes-----	314	0.1
AffE	Alvin-Bloomfield-Princeton complex, 18 to 25 percent slopes-----	507	0.2
AfsB	Alvin-Princeton fine sandy loams, 2 to 6 percent slopes-----	655	0.3
AfsC	Alvin-Princeton fine sandy loams, 6 to 12 percent slopes-----	607	0.2
AftD	Alvin-Princeton sandy loams, 12 to 18 percent slopes-----	174	*
AhrAK	Armiesburg silty clay loam, 0 to 2 percent slopes, occasionally flooded, brief duration--	403	0.2
AkeB2	Arney silt loam, 2 to 6 percent slopes, eroded-----	398	0.2
AloB2	Ava silt loam, 2 to 6 percent slopes, eroded-----	16,894	6.8
AmkA	Ayrshire fine sandy loam, 0 to 2 percent slopes-----	139	*
BdxAV	Belknap silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration-----	4,233	1.7
BgsAH	Birds silt loam, 0 to 1 percent slopes, frequently flooded, brief duration-----	798	0.3
BodAV	Bonnie silt loam, 0 to 1 percent slopes, frequently flooded, very brief duration-----	351	0.1
CkkB2	Cincinnati silt loam, 2 to 6 percent slopes, eroded-----	4,311	1.7
CkkC2	Cincinnati silt loam, 6 to 12 percent slopes, eroded-----	3,138	1.3
CkkC3	Cincinnati silt loam, 6 to 12 percent slopes, severely eroded-----	6,156	2.5
CkkD2	Cincinnati silt loam, 12 to 18 percent slopes, eroded-----	1,170	0.5
CkkD3	Cincinnati silt loam, 12 to 18 percent slopes, severely eroded-----	2,817	1.1
CspC2	Crider silt loam, 6 to 12 percent slopes, eroded-----	472	0.2
CspC3	Crider silt loam, 6 to 12 percent slopes, severely eroded-----	345	0.1
DfnA	Dubois silt loam, 0 to 2 percent slopes-----	6,271	2.5
EaaD2	Ebal silt loam, 12 to 18 percent slopes, eroded-----	145	*
GaaE2	Gallimore loam, 18 to 25 percent slopes, eroded-----	852	0.3
GabG	Gallimore-Chetwynd complex, 25 to 70 percent slopes-----	5,382	2.2
GblAH	Gessie silt loam, 0 to 2 percent slopes, frequently flooded, brief duration-----	1,838	0.7
GmcD3	Grayford silt loam, 12 to 18 percent slopes, severely eroded-----	1,010	0.4
GmcE2	Grayford silt loam, 18 to 25 percent slopes, eroded-----	1,900	0.8
GmhD2	Grayford-Ryker silt loams, 12 to 18 percent slopes, eroded-----	1,545	0.6
GmpE2	Greybrook silt loam, 18 to 25 percent slopes, eroded-----	1,036	0.4
GmpF	Greybrook silt loam, 25 to 35 percent slopes-----	1,311	0.5
HarD2	Haggatt silt loam, 12 to 18 percent slopes, eroded-----	125	*
HarD3	Haggatt silt loam, 12 to 18 percent slopes, severely eroded-----	492	0.2
HasE2	Haggatt-Caneyville silt loams, 18 to 25 percent slopes, eroded-----	315	0.1
HccA	Haubstadt silt loam, 0 to 2 percent slopes-----	442	0.2
HccB2	Haubstadt silt loam, 2 to 6 percent slopes, eroded-----	5,518	2.2
HccC3	Haubstadt silt loam, 6 to 12 percent slopes, severely eroded-----	540	0.2
HcgAH	Haymond silt loam, 0 to 2 percent slopes, frequently flooded, brief duration-----	56	*
HchA	Haymond silt loam, sinkhole, 0 to 2 percent slopes-----	61	*
HefG	Hickory loam, 45 to 70 percent slopes-----	1,558	0.6
HelD2	Hickory-Stinesville silt loams, karst, hilly, eroded-----	284	0.1
HeoE	Hickory silt loam, 18 to 25 percent slopes-----	2,246	0.9
HeoE3	Hickory silt loam, 18 to 25 percent slopes, severely eroded-----	1,365	0.5
HeoG	Hickory silt loam, 25 to 70 percent slopes-----	5,190	2.1
HepG	Hickory-Adyeville complex, 35 to 60 percent slopes-----	6,180	2.5
HesG	Hickory-Chetwynd loams, 35 to 70 percent slopes-----	5,680	2.3
HeuE	Hickory-Wellston silt loams, 18 to 25 percent slopes-----	3,949	1.6
HeuF	Hickory-Wellston silt loams, 25 to 35 percent slopes-----	7,798	3.1
HkaB	Hollybrook silt loam, 1 to 5 percent slopes-----	158	*
HleAV	Holton silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration-----	3,479	1.4
HnoA	Hoosierville silt loam, 0 to 1 percent slopes-----	502	0.2
LnfA	Lieber silt loam, 0 to 2 percent slopes-----	2,569	1.0
LnfB	Lieber silt loam, 2 to 4 percent slopes-----	357	0.1
MecA	Martinsville loam, 0 to 2 percent slopes-----	68	*
MecAQ	Martinsville loam, 0 to 2 percent slopes, rarely flooded-----	193	*
MecB	Martinsville loam, 2 to 6 percent slopes-----	157	*
MhhAH	McAdoo silt loam, 0 to 2 percent slopes, frequently flooded, brief duration-----	1,627	0.7
MhhAK	McAdoo silt loam, 0 to 2 percent slopes, occasionally flooded, brief duration-----	642	0.3
MhuA	McGary silt loam, 0 to 2 percent slopes-----	322	0.1
MrcG	Minnehaha silty clay loam, 35 to 75 percent slopes-----	1,977	0.8
MsvA	Montgomery silty clay loam, 0 to 1 percent slopes-----	266	0.1
MvrAH	Moundhaven loamy fine sand, 0 to 2 percent slopes, frequently flooded, brief duration---	250	0.1
NbhAH	Newark silt loam, 0 to 2 percent slopes, frequently flooded, brief duration-----	3,716	1.5

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
OfaAV	Oldenburg silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration-----	2,208	0.9
OfcAV	Oldenburg fine sandy loam, sandy substratum, 0 to 2 percent slopes, frequently flooded, very brief duration-----	1,492	0.6
OfeB	Olephant silt loam, 1 to 3 percent slopes-----	763	0.3
OmkC2	Otwell silt loam, 6 to 12 percent slopes, eroded-----	1,202	0.5
OmkC3	Otwell silt loam, 6 to 12 percent slopes, severely eroded-----	1,407	0.6
OmkD3	Otwell silt loam, 12 to 18 percent slopes, severely eroded-----	991	0.4
PbbC2	Parke silt loam, 6 to 12 percent slopes, eroded-----	3,156	1.3
PbbC3	Parke silt loam, 6 to 12 percent slopes, severely eroded-----	952	0.4
PbbD2	Parke silt loam, 12 to 18 percent slopes, eroded-----	851	0.3
PbbD3	Parke silt loam, 12 to 18 percent slopes, severely eroded-----	762	0.3
PcnA	Patrickburg silt loam, 0 to 2 percent slopes-----	310	0.1
PcrAQ	Pekin silt loam, 0 to 2 percent slopes, rarely flooded-----	178	*
PcrB2	Pekin silt loam, 2 to 6 percent slopes, eroded-----	39	*
PcrC2	Pekin silt loam, 6 to 12 percent slopes, eroded-----	41	*
PhaA	Peoga silt loam, 0 to 1 percent slopes-----	3,032	1.2
PhaAP	Peoga silt loam, ponded, 0 to 1 percent slopes-----	52	*
PlcAV	Piankeshaw silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration---	737	0.3
PlfA	Pike silt loam, 0 to 2 percent slopes-----	557	0.2
PlfB2	Pike silt loam, 2 to 6 percent slopes, eroded-----	4,533	1.8
Pml	Pits, quarry-----	367	0.1
PrwAV	Pope fine sandy loam, 0 to 2 percent slopes, frequently flooded, very brief duration---	802	0.3
PryB	Potawatomi silt loam, 1 to 3 percent slopes-----	2,913	1.2
PsaD3	Pottersville silt loam, 12 to 18 percent slopes, severely eroded-----	300	0.1
PsaG	Pottersville silt loam, 25 to 50 percent slopes-----	387	0.2
PsbF	Pottersville silt loam, karst, steep-----	301	0.1
Rnn	Riverwash-----	64	*
RpzG	Romona-Corydon-Rock outcrop complex, 35 to 60 percent slopes-----	1,086	0.4
RtcC3	Ryker silt loam, 6 to 12 percent slopes, severely eroded-----	2,317	0.9
SfoA	Shakamak silt loam, 1 to 3 percent slopes-----	6,978	2.8
SfyB2	Shircliff silt loam, 2 to 6 percent slopes, eroded-----	328	0.1
SfyC2	Shircliff silt loam, 6 to 12 percent slopes, eroded-----	149	*
SneC2	Solsberry silt loam, 6 to 12 percent slopes, eroded-----	4,308	1.7
SneC3	Solsberry silt loam, 6 to 12 percent slopes, severely eroded-----	4,556	1.8
SneD2	Solsberry silt loam, 12 to 18 percent slopes, eroded-----	2,236	0.9
SneD3	Solsberry silt loam, 12 to 18 percent slopes, severely eroded-----	2,614	1.1
SneD5	Solsberry silt loam, 12 to 18 percent slopes, gullied-----	354	0.1
StaAV	Steff silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration-----	4,381	1.8
StdAH	Stendal silt loam, 0 to 2 percent slopes, frequently flooded, brief duration-----	692	0.3
StfB2	Stinesville silt loam, 2 to 6 percent slopes, eroded-----	6,101	2.5
StfC2	Stinesville silt loam, 6 to 12 percent slopes, eroded-----	4,975	2.0
StgC2	Stinesville-Ryker-Grayford silt loams, karst, rolling, eroded-----	800	0.3
StgD2	Stinesville-Ryker-Grayford silt loams, karst, hilly, eroded-----	2,620	1.1
SupAH	Stonelick sandy loam, 0 to 2 percent slopes, frequently flooded, brief duration-----	2,256	0.9
SwhG	Stubenville-Hickory complex, 35 to 70 percent slopes-----	2,338	0.9
TadA	Taggart silt loam, 0 to 2 percent slopes-----	63	*
TahB	Tapawingo and Nawakwa silt loams, 2 to 8 percent slopes-----	627	0.3
TcgG	Tipsaw-Rock outcrop complex, 35 to 70 percent slopes-----	1,236	0.5
TtaG	Tulip-Tipsaw complex, 25 to 60 percent slopes-----	6,670	2.7
TtcE	Tulip-Wellston-Adyeville silt loams, 18 to 25 percent slopes-----	4,558	1.8
Uaa	Udorthents, cut and filled-----	270	0.1
VdgA	Vigo silt loam, 0 to 2 percent slopes-----	2,193	0.9
W	Water-----	1,462	0.6
WeaA	Wea, sandy substratum-Elston complex, 0 to 2 percent slopes-----	213	*
WeaAQ	Wea, sandy substratum-Elston complex, 0 to 2 percent slopes, rarely flooded-----	297	0.1
WhfD2	Wellston silt loam, 12 to 18 percent slopes, eroded-----	2,675	1.1
WlmAK	Whitaker loam, 0 to 2 percent slopes, occasionally flooded, brief duration-----	78	*
WokAH	Wilbur silt loam, 0 to 2 percent slopes, frequently flooded, brief duration-----	1,072	0.4
WolAI	Wilhite silty clay, 0 to 1 percent slopes, frequently flooded, long duration-----	485	0.2
WomAH	Wilhite silty clay loam, 0 to 1 percent slopes, frequently flooded, brief duration-----	369	0.1
WprAQ	Wirt loam, 0 to 2 percent slopes, rarely flooded-----	290	0.1
WpuAK	Wirt silt loam, 0 to 2 percent slopes, occasionally flooded, brief duration-----	583	0.2
WpuAV	Wirt silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration-----	5,375	2.2

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
WpyBJ	Wirt-Pekin silt loams, 0 to 6 percent slopes, frequently flooded, very long duration----	771	0.3
ZamB2	Zanesville silt loam, soft bedrock substratum, 2 to 6 percent slopes, eroded-----	3,732	1.5
ZamC2	Zanesville silt loam, soft bedrock substratum, 6 to 12 percent slopes, eroded-----	3,623	1.5
ZamC3	Zanesville silt loam, soft bedrock substratum, 6 to 12 percent slopes, severely eroded--	4,683	1.9
ZamD2	Zanesville silt loam, soft bedrock substratum, 12 to 18 percent slopes, eroded-----	1,086	0.4
ZamD5	Zanesville silt loam, soft bedrock substratum, 12 to 18 percent slopes, gullied-----	427	0.2
ZapD3	Zanesville, soft bedrock substratum-Tulip silt loams, 12 to 18 percent slopes, severely eroded-----	4,127	1.7
	Total-----	248,224	100.0

* Less than 0.1 percent.

Table 5.--Main Limitations and Hazards Affecting Cropland

(See text for a description of the limitations and hazards listed in this table. Only those soils that are suited for cultivated crops are listed in this table.)

Soil name and map symbol	Cropland limitations and hazards
AbgAU:	
Adrian-----	Ponding, low pH, wind erosion, subsidence.
AfeC:	
Alvin-----	Low pH, water erosion, wind erosion, moderate available water capacity.
Bloomfield-----	Low pH, water erosion, wind erosion, low available water capacity.
AfeD:	
Alvin-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.
Bloomfield-----	Equipment limitation (slope), low pH, water erosion, wind erosion, low available water capacity.
AffE:	
Alvin-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.
Bloomfield-----	Equipment limitation (slope), low pH, water erosion, wind erosion, low available water capacity.
Princeton-----	Equipment limitation (slope), low pH, water erosion, wind erosion.
AfsB:	
Alvin-----	Low pH, water erosion, wind erosion, moderate available water capacity.
Princeton-----	Low pH, water erosion, wind erosion.
AfsC:	
Alvin-----	Low pH, water erosion, wind erosion, moderate available water capacity.
Princeton-----	Low pH, water erosion, wind erosion.
AftD:	
Alvin-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.
Princeton-----	Equipment limitation (slope), low pH, water erosion, wind erosion.
AhrAK:	
Armiesburg-----	Flooding, high pH, clodding.
AkeB2:	
Arney-----	Low pH, crusting, water erosion, restricted permeability.
AloB2:	
Ava-----	Limited rooting depth (fragipan), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
AmkA:	
Ayrshire-----	Wetness, low pH, wind erosion.
BdxAV:	
Belknap-----	Flooding, wetness, low pH, crusting.
BgeAH:	
Birds-----	Flooding, ponding, low pH, crusting.
BodAV:	
Bonnie-----	Flooding, ponding, low pH, crusting, restricted permeability.
CkkB2:	
Cincinnati-----	Limited rooting depth (fragipan), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.

Table 5.--Main Limitations and Hazards Affecting Cropland--Continued

Soil name and map symbol	Cropland limitations and hazards
CkkC2:	
Cincinnati-----	Limited rooting depth (fragipan), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
CkkC3:	
Cincinnati-----	Wetness, limited rooting depth (fragipan), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
CkkD2:	
Cincinnati-----	Equipment limitation (slope), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
CkkD3:	
Cincinnati-----	Equipment limitation (slope), wetness, low pH, crusting, water erosion, low available water capacity, restricted permeability.
CspC2:	
Crider-----	Low pH, crusting, water erosion.
CspC3:	
Crider-----	Low pH, crusting, water erosion.
DfnA:	
Dubois-----	Wetness, low pH, crusting, restricted permeability.
EaaD2:	
Ebal-----	Equipment limitation (slope), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
GaaE2:	
Gallimore-----	Equipment limitation (slope), low pH, crusting, water erosion, moderate available water capacity.
GabG:	
Gallimore-----	Equipment limitation (slope), low pH, water erosion, moderate available water capacity.
Chetwynd-----	Equipment limitation (slope), low pH, water erosion.
GblAH:	
Gessie-----	Flooding, high pH, crusting.
Gmcd3:	
Grayford-----	Equipment limitation (slope), low pH, crusting, water erosion, moderate available water capacity.
Gmce2:	
Grayford-----	Equipment limitation (slope), low pH, crusting, water erosion, moderate available water capacity.
Gmhd2:	
Grayford-----	Equipment limitation (slope), low pH, crusting, water erosion, moderate available water capacity.
Ryker-----	Equipment limitation (slope), low pH, crusting, water erosion.
GmpE2:	
Greybrook-----	Equipment limitation (slope), low pH, crusting, water erosion, restricted permeability.
GmpF:	
Greybrook-----	Equipment limitation (slope), low pH, water erosion, restricted permeability.
HarD2:	
Haggatt-----	Equipment limitation (slope), low pH, crusting, water erosion, moderate available water capacity.

Table 5.--Main Limitations and Hazards Affecting Cropland--Continued

Soil name and map symbol	Cropland limitations and hazards
HarD3:	
Haggatt-----	Equipment limitation (slope), low pH, crusting, water erosion, low available water capacity.
HasE2:	
Haggatt-----	Equipment limitation (slope), low pH, crusting, water erosion, moderate available water capacity.
Caneyville-----	Equipment limitation (slope), limited rooting depth (bedrock), low pH, crusting, water erosion, low available water capacity.
HccA:	
Haubstadt-----	Low pH, crusting, moderate available water capacity, restricted permeability.
HccB2:	
Haubstadt-----	Low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
HccC3:	
Haubstadt-----	Wetness, low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
HcgAH:	
Haymond-----	Flooding, low pH, crusting.
HchA:	
Haymond-----	Ponding, low pH, crusting.
HefG:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
HelD2:	
Hickory-----	Equipment limitation (slope), low pH, crusting, water erosion.
Stinesville-----	Low pH, crusting, water erosion.
HeoE:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
HeoE3:	
Hickory-----	Equipment limitation (slope), low pH, crusting, water erosion, moderate available water capacity.
HeoG:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
HepG:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
Adyeville-----	Equipment limitation (slope), limited rooting depth (bedrock), low pH, water erosion, low available water capacity, restricted permeability.
HesG:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
Chetwynd-----	Equipment limitation (slope), low pH, water erosion.
HeuE:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
Wellston-----	Equipment limitation (slope), low pH, water erosion, moderate available water capacity.
HeuF:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
Wellston-----	Equipment limitation (slope), low pH, water erosion, moderate available water capacity.

Table 5.--Main Limitations and Hazards Affecting Cropland--Continued

Soil name and map symbol	Cropland limitations and hazards
HkaB: Hollybrook-----	Wetness, low pH, crusting, water erosion, moderate available water capacity.
HleAV: Holton-----	Flooding, wetness, low pH, crusting.
HnoA: Hoosierville-----	Ponding, low pH, crusting.
LnfA: Lieber-----	Wetness, low pH, crusting, moderate available water capacity, restricted permeability.
LnfB: Lieber-----	Wetness, low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
MecA: Martinsville-----	Low pH, crusting.
MecAQ: Martinsville-----	Low pH, crusting.
MecB: Martinsville-----	Low pH, crusting, water erosion.
MhhAH: McAdoo-----	Flooding, high pH.
MhhAK: McAdoo-----	Flooding, high pH.
MhuA: McGary-----	Wetness, low pH, crusting, restricted permeability.
MrcG: Minnehaha-----	Equipment limitation (slope), low pH, water erosion, low available water capacity.
MsvA: Montgomery-----	Ponding, clodding, restricted permeability.
MvrAH: Moundhaven-----	Flooding, high pH, wind erosion, low available water capacity.
NbhAH: Newark-----	Flooding, wetness, low pH, crusting.
OfaAV: Oldenburg-----	Flooding, low pH, crusting.
OfcAV: Oldenburg-----	Flooding, low pH, wind erosion, moderate available water capacity.
OfeB: Olephant-----	Low pH, crusting, restricted permeability.
OmKC2: Otwell-----	Low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
OmKC3: Otwell-----	Wetness, low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
OmKD3: Otwell-----	Equipment limitation (slope), wetness, low pH, crusting, water erosion, moderate available water capacity, restricted permeability.

Table 5.--Main Limitations and Hazards Affecting Cropland--Continued

Soil name and map symbol	Cropland limitations and hazards
PbbC2: Parke-----	Low pH, crusting, water erosion.
PbbC3: Parke-----	Low pH, crusting, water erosion.
PbbD2: Parke-----	Equipment limitation (slope), low pH, crusting, water erosion.
PbbD3: Parke-----	Equipment limitation (slope), low pH, crusting, water erosion.
PcnA: Patrickburg-----	Wetness, limited rooting depth (fragipan), low pH, crusting, moderate available water capacity, restricted permeability.
PcrAQ: Pekin-----	Low pH, crusting, moderate available water capacity, restricted permeability.
PcrB2: Pekin-----	Limited rooting depth (fragipan), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
PcrC2: Pekin-----	Limited rooting depth (fragipan), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
PhaA: Peoga-----	Ponding, low pH, crusting, restricted permeability.
PhaAP: Peoga-----	Ponding, low pH, crusting, restricted permeability.
PlcAV: Piankeshaw-----	Flooding, low pH, crusting, moderate available water capacity.
PlfA: Pike-----	Low pH, crusting.
PlfB2: Pike-----	Low pH, crusting, water erosion.
Pml: Pits, quarry-----	Not rated.
PrwAV: Pope-----	Flooding, low pH, wind erosion, moderate available water capacity.
PryB: Potawatomi-----	Wetness, low pH, crusting, moderate available water capacity, restricted permeability.
PsaD3: Pottersville-----	Equipment limitation (slope), low pH, crusting, water erosion, restricted permeability.
PsaG: Pottersville-----	Equipment limitation (slope), low pH, water erosion, restricted permeability.
PsbF: Pottersville-----	Equipment limitation (slope), low pH, water erosion, restricted permeability.
Rnn: Riverwash-----	Flooding, restricted permeability.

Table 5.--Main Limitations and Hazards Affecting Cropland--Continued

Soil name and map symbol	Cropland limitations and hazards
RpzG:	
Romona-----	Equipment limitation (slope), equipment limitation (rock fragments in the surface layer), limited rooting depth (bedrock), clodding, water erosion, very low available water capacity.
Corydon-----	Equipment limitation (slope), equipment limitation (rock fragments in the surface layer), limited rooting depth (bedrock), high pH, water erosion, very low available water capacity, restricted permeability.
Rock outcrop-----	Areas of rock outcrop.
RtcC3:	
Ryker-----	Low pH, crusting, water erosion.
SfoA:	
Shakamak-----	Limited rooting depth (fragipan), low pH crusting, moderate available water capacity, restricted permeability.
SfyB2:	
Shircliff-----	Low pH, crusting, water erosion, restricted permeability.
SfyC2:	
Shircliff-----	Low pH, crusting, water erosion, restricted permeability.
SneC2:	
Solsberry-----	Limited rooting depth (fragipan), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
SneC3:	
Solsberry-----	Wetness, limited rooting depth (fragipan), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
SneD2:	
Solsberry-----	Equipment limitation (slope), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
SneD3:	
Solsberry-----	Equipment limitation (slope), wetness, low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
SneD5:	
Solsberry-----	Equipment limitation (slope), wetness, low pH, crusting, water erosion, low available water capacity, restricted permeability.
StaAV:	
Steff-----	Flooding, low pH, crusting.
StdAH:	
Stendal-----	Flooding, wetness, low pH, crusting.
StfB2:	
Stinesville-----	Low pH, crusting, water erosion.
StfC2:	
Stinesville-----	Low pH, crusting, water erosion.
StgC2:	
Stinesville-----	Low pH, crusting, water erosion.
Ryker-----	Low pH, crusting, water erosion.
Grayford-----	Low pH, crusting, water erosion, moderate available water capacity.

Table 5.--Main Limitations and Hazards Affecting Cropland--Continued

Soil name and map symbol	Cropland limitations and hazards
StgD2:	
Stinesville-----	Low pH, crusting, water erosion.
Ryker-----	Equipment limitation (slope), low pH, crusting, water erosion.
Grayford-----	Equipment limitation (slope), low pH, crusting, water erosion, moderate available water capacity.
SupAH:	
Stonelick-----	Flooding, high pH, wind erosion, moderate available water capacity.
SwhG:	
Stubenville-----	Equipment limitation (slope), low pH, water erosion.
Hickory-----	Equipment limitation (slope), low pH, water erosion, moderate available water capacity.
TadA:	
Taggart-----	Wetness, low pH, crusting, restricted permeability.
TahB:	
Tapawingo-----	Low pH, crusting, water erosion, low available water capacity, restricted permeability.
Nawakwa-----	Low pH, crusting, water erosion, low available water capacity, restricted permeability.
TcgG:	
Tipsaw-----	Equipment limitation (slope), limited rooting depth (bedrock), low pH, water erosion, low available water capacity.
Rock outcrop-----	Areas of rock outcrop.
TtaG:	
Tulip-----	Equipment limitation (slope), low pH, water erosion.
Tipsaw-----	Equipment limitation (slope), limited rooting depth (bedrock), low pH, water erosion, low available water capacity, restricted permeability.
TtcE:	
Tulip-----	Equipment limitation (slope), low pH, water erosion.
Wellston-----	Equipment limitation (slope), low pH, water erosion, moderate available water capacity.
Adyeville-----	Equipment limitation (slope), limited rooting depth (bedrock), low pH, water erosion, low available water capacity, restricted permeability.
Uaa:	
Udorthents-----	Not rated.
VdgA:	
Vigo-----	Wetness, low pH, crusting, restricted permeability.
W:	
Water.	
WeaA:	
Wea-----	Wind erosion, moderate available water capacity.
Elston-----	Low pH, wind erosion, moderate available water capacity.
WeaAQ:	
Wea-----	Wind erosion, moderate available water capacity.
Elston-----	Low pH, wind erosion, moderate available water capacity.

Table 5.--Main Limitations and Hazards Affecting Cropland--Continued

Soil name and map symbol	Cropland limitations and hazards
WhfD2: Wellston-----	Equipment limitation (slope), low pH, crusting, water erosion, moderate available water capacity.
WlmaK: Whitaker-----	Flooding, wetness, low pH, crusting, wind erosion.
WokAH: Wilbur-----	Flooding, low pH, crusting.
WolAI: Wilhite-----	Flooding, ponding, low pH, clodding, moderate available water capacity, restricted permeability.
WomAH: Wilhite-----	Flooding, ponding, low pH, clodding, moderate available water capacity, restricted permeability.
WpraQ: Wirt-----	Low pH, crusting.
WpuAK: Wirt-----	Flooding, low pH, crusting.
WpuAV: Wirt-----	Flooding, low pH, crusting.
WpyBJ: Wirt-----	Flooding, crusting.
Pekin-----	Flooding, limited rooting depth (fragipan), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
ZamB2: Zanesville, soft bedrock substratum---	Limited rooting depth (fragipan), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
ZamC2: Zanesville, soft bedrock substratum---	Limited rooting depth (fragipan), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
ZamC3: Zanesville, soft bedrock substratum---	Limited rooting depth (fragipan), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
ZamD2: Zanesville, soft bedrock substratum---	Equipment limitation (slope), limited rooting depth (fragipan), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.
ZamD5: Zanesville, soft bedrock substratum---	Equipment limitation (slope), limited rooting depth (fragipan), low pH, crusting, water erosion, low available water capacity, restricted permeability.
ZapD3: Zanesville, soft bedrock substratum---	Equipment limitation (slope), limited rooting depth (fragipan), low pH, crusting, water erosion, capacity, moderate available water capacity, restricted permeability.
Tulip-----	Equipment limitation (slope), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.

Table 6.--Main Limitations and Hazards Affecting Pasture

(See text for a description of the limitations and hazards listed in this table. Only soils suited to pasture are listed in this table.)

Map symbol and soil name	Pasture limitations and hazards
AbgAU:	
Adrian-----	Ponding, trafficability limitation, low pH, wind erosion, subsidence.
AfeC:	
Alvin-----	Low pH, water erosion, wind erosion.
Bloomfield-----	Low pH, water erosion, wind erosion, low available water capacity.
AfeD:	
Alvin-----	Equipment limitation (slope), low pH, water erosion, wind erosion.
Bloomfield-----	Equipment limitation (slope), low pH, water erosion, wind erosion, low available water capacity.
AffE:	
Alvin-----	Equipment limitation (slope), low pH, water erosion, wind erosion.
Bloomfield-----	Equipment limitation (slope), low pH, water erosion, wind erosion, low available water capacity.
Princeton-----	Equipment limitation (slope), low pH, water erosion, wind erosion.
AfsB:	
Alvin-----	Low pH, water erosion, wind erosion.
Princeton-----	Low pH, water erosion, wind erosion.
AfsC:	
Alvin-----	Low pH, water erosion, wind erosion.
Princeton-----	Low pH, water erosion, wind erosion.
AftD:	
Alvin-----	Equipment limitation (slope), low pH, water erosion, wind erosion.
Princeton-----	Equipment limitation (slope), low pH, water erosion, wind erosion.
AhrAK:	
Armiesburg-----	Flooding, high pH.
AkeB2:	
Arney-----	Low pH, water erosion.
AloB2:	
Ava-----	Limited rooting depth (fragipan), low pH, water erosion.
AmkA:	
Ayrshire-----	Trafficability limitation, low pH, wind erosion.
BdxAV:	
Belknap-----	Flooding, trafficability limitation, low pH.
BgeAH:	
Birds-----	Flooding, ponding, trafficability limitation, low pH.
BodAV:	
Bonnie-----	Flooding, ponding, trafficability limitation, low pH.

Table 6.--Main Limitations and Hazards Affecting Pasture

Map symbol and soil name	Pasture limitations and hazards
CkkB2: Cincinnati-----	Limited rooting depth (fragipan), low pH, water erosion.
CkkC2: Cincinnati-----	Limited rooting depth (fragipan), low pH, water erosion.
CkkC3: Cincinnati-----	Limited rooting depth (fragipan), low pH, water erosion.
CkkD2: Cincinnati-----	Equipment limitation (slope), low pH, water erosion.
CkkD3: Cincinnati-----	Equipment limitation (slope), low pH, water erosion, low available water capacity.
CspC2: Crider-----	Low pH, water erosion.
CspC3: Crider-----	Low pH, water erosion.
DfnA: Dubois-----	Trafficability limitation, low pH.
EaaD2: Ebal-----	Equipment limitation (slope), low pH, water erosion.
GaaE2: Gallimore-----	Equipment limitation (slope), low pH, water erosion.
GabG: Gallimore-----	Equipment limitation (slope), low pH, water erosion.
Chetwynd-----	Equipment limitation (slope), low pH, water erosion.
GblAH: Gessie-----	Flooding, high pH.
GmcD3: Grayford-----	Equipment limitation (slope), low pH, water erosion.
GmcE2: Grayford-----	Equipment limitation (slope), low pH, water erosion.
GmhD2: Grayford-----	Equipment limitation (slope), low pH, water erosion.
Ryker-----	Equipment limitation (slope), low pH, water erosion.
GmpE2: Greybrook-----	Equipment limitation (slope), low pH, water erosion.
GmpF: Greybrook-----	Equipment limitation (slope), low pH, water erosion.
HarD2: Haggatt-----	Equipment limitation (slope), low pH, water erosion.
HarD3: Haggatt-----	Equipment limitation (slope), low pH, water erosion, low available water capacity.

Table 6.--Main Limitations and Hazards Affecting Pasture

Map symbol and soil name	Pasture limitations and hazards
HasE2:	
Haggatt-----	Equipment limitation (slope), low pH, water erosion.
Caneyville-----	Equipment limitation (slope), limited rooting depth (bedrock), low pH, water erosion, low available water capacity.
HccA:	
Haubstadt-----	Low pH.
HccB2:	
Haubstadt-----	Low pH, water erosion.
HccC3:	
Haubstadt-----	Low pH, water erosion.
HcgAH:	
Haymond-----	Flooding, low pH.
HchA:	
Haymond-----	Ponding, low pH.
HefG:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
Held2:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
Stinesville-----	Low pH, water erosion.
HeoE:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
HeoE3:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
HeoG:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
HepG:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
Adyeville-----	Equipment limitation (slope), limited rooting depth (bedrock), low pH, water erosion, low available water capacity.
HesG:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
Chetwynd-----	Equipment limitation (slope), low pH, water erosion.
HeuE:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
Wellston-----	Equipment limitation (slope), low pH, water erosion.
HeuF:	
Hickory-----	Equipment limitation (slope), low pH, water erosion.
Wellston-----	Equipment limitation (slope), low pH, water erosion.
HkaB:	
Hollybrook-----	Trafficability limitation, low pH, water erosion.

Table 6.--Main Limitations and Hazards Affecting Pasture

Map symbol and soil name	Pasture limitations and hazards
HleAV: Holton-----	Flooding, trafficability limitation, low pH.
HnoA: Hoosierville-----	Ponding, trafficability limitation, low pH.
LnfA: Lieber-----	Trafficability limitation, low pH.
LnfB: Lieber-----	Trafficability limitation, low pH, water erosion.
MecA: Martinsville-----	Low pH.
MecAQ: Martinsville-----	Low pH.
MecB: Martinsville-----	Low pH, water erosion.
MhhAH: McAdoo-----	Flooding, high pH.
MhhAK: McAdoo-----	Flooding, high pH.
MhuA: McGary-----	Trafficability limitation, low pH.
MrcG: Minnehaha-----	Equipment limitation (slope), low pH, water erosion, low available water capacity.
MsvA: Montgomery-----	Ponding, trafficability limitation.
MvrAH: Moundhaven-----	Flooding, high pH, wind erosion, low available water capacity.
NbhAH: Newark-----	Flooding, trafficability limitation, low pH.
OfaAV: Oldenburg-----	Flooding, low pH.
OfcAV: Oldenburg-----	Flooding, low pH, wind erosion.
OfeB: Olephant-----	Low pH.
OmkC2: Otwell-----	Low pH, water erosion.
OmkC3: Otwell-----	Low pH, water erosion.
OmkD3: Otwell-----	Equipment limitation (slope), low pH, water erosion.

Table 6.--Main Limitations and Hazards Affecting Pasture

Map symbol and soil name	Pasture limitations and hazards
PbbC2: Parke-----	Low pH, water erosion.
PbbC3: Parke-----	Low pH, water erosion.
PbbD2: Parke-----	Equipment limitation (slope), low pH, water erosion.
PbbD3: Parke-----	Equipment limitation (slope), low pH, water erosion.
PcnA: Patrickburg-----	Trafficability limitation, limited rooting depth (fragipan), low pH.
PcrAQ: Pekin-----	Low pH.
PcrB2: Pekin-----	Limited rooting depth (fragipan), low pH, water erosion.
PcrC2: Pekin-----	Limited rooting depth (fragipan), low pH, water erosion.
PhaA: Peoga-----	Ponding, trafficability limitation, low pH.
PhaAP: Peoga-----	Ponding, trafficability limitation, low pH.
PlcAV: Piankeshaw-----	Flooding, low pH.
PlfA: Pike-----	Low pH.
PlfB2: Pike-----	Low pH, water erosion.
Pml: Pits, quarry-----	Not rated.
PrwAV: Pope-----	Flooding, low pH, wind erosion.
PryB: Potawatomi-----	Low pH.
PsaD3: Pottersville-----	Equipment limitation (slope), low pH, water erosion.
PsaG: Pottersville-----	Equipment limitation (slope), low pH, water erosion.
PsbF: Pottersville-----	Equipment limitation (slope), low pH, water erosion.
Rnn: Riverwash-----	Flooding, very low available water capacity.

Table 6.--Main Limitations and Hazards Affecting Pasture

Map symbol and soil name	Pasture limitations and hazards
RpzG:	
Romona-----	Equipment limitation (slope), equipment limitation (rock fragments in the surface layer), limited rooting depth (bedrock), water erosion, very low available water capacity.
Corydon-----	Equipment limitation (slope), equipment limitation (rock fragments in the surface layer), limited rooting depth (bedrock), high pH, water erosion, very low available water capacity.
Rock outcrop-----	Areas of rock outcrop.
RtcC3:	
Ryker-----	Low pH, water erosion.
SfoA:	
Shakamak-----	Limited rooting depth (fragipan), low pH.
SfyB2:	
Shircliff-----	Low pH, water erosion.
SfyC2:	
Shircliff-----	Low pH, water erosion.
SneC2:	
Solsberry-----	Limited rooting depth (fragipan), low pH, water erosion.
SneC3:	
Solsberry-----	Limited rooting depth (fragipan), low pH, water erosion.
SneD2:	
Solsberry-----	Equipment limitation (slope), low pH, water erosion.
SneD3:	
Solsberry-----	Equipment limitation (slope), low pH, water erosion.
SneD5:	
Solsberry-----	Equipment limitation (slope), low pH, water erosion, low available water capacity.
StaAV:	
Steff-----	Flooding, low pH.
StdAH:	
Stendal-----	Flooding, trafficability limitation, low pH.
StfB2:	
Stinesville-----	Low pH, water erosion.
StfC2:	
Stinesville-----	Low pH, water erosion.
StgC2:	
Stinesville-----	Low pH, water erosion.
Ryker-----	Low pH, water erosion.
Grayford-----	Low pH, water erosion.
StgD2:	
Stinesville-----	Low pH, water erosion.
Ryker-----	Equipment limitation (slope), low pH, water erosion.

Table 6.--Main Limitations and Hazards Affecting Pasture

Map symbol and soil name	Pasture limitations and hazards
StgD2: Grayford-----	Equipment limitation (slope), low pH, water erosion.
SupAH: Stonelick-----	Flooding, high pH, wind erosion.
SwhG: Stubenville-----	Equipment limitation (slope), low pH, water erosion.
Hickory-----	Equipment limitation (slope).
TadA: Taggart-----	Trafficability limitation, low pH.
TahB: Tapawingo-----	Low pH, water erosion, low available water capacity.
Nawakwa-----	Low pH, water erosion, low available water capacity.
TcgG: Tipsaw-----	Equipment limitation (slope), limited rooting depth (bedrock), low pH, water erosion, low available water capacity.
Rock outcrop-----	Areas of rock outcrop.
TtaG: Tulip-----	Equipment limitation (slope), low pH, water erosion.
Tipsaw-----	Equipment limitation (slope), limited rooting depth (bedrock), low pH, water erosion, low available water capacity.
TtcE: Tulip-----	Equipment limitation (slope), low pH, water erosion.
Wellston-----	Equipment limitation (slope), low pH, water erosion.
Adyeville-----	Equipment limitation (slope), limited rooting depth (bedrock), low pH, water erosion, low available water capacity.
Uaa: Udorthents-----	Not rated.
VdgA: Vigo-----	Trafficability limitation, low pH.
W: Water.	
WeaA: Wea-----	Wind erosion.
Elston-----	Low pH, wind erosion.
WeaAQ: Wea-----	Wind erosion.
Elston-----	Low pH, wind erosion.
WhfD2: Wellston-----	Equipment limitation (slope), low pH, water erosion.
WlmAK: Whitaker-----	Flooding, trafficability limitation, low pH, wind erosion.

Table 6.--Main Limitations and Hazards Affecting Pasture

Map symbol and soil name	Pasture limitations and hazards
WokAH: Wilbur-----	Flooding, low pH.
WolAI: Wilhite-----	Flooding, ponding, trafficability limitation, low pH.
WomAH: Wilhite-----	Flooding, ponding, trafficability limitation, low pH.
WprAQ: Wirt-----	Low pH.
WpuAK: Wirt-----	Flooding, low pH.
WpuAV: Wirt-----	Flooding, low pH.
WpyBJ: Wirt-----	Flooding.
Pekin-----	Flooding, limited rooting depth (fragipan), low pH, water erosion.
ZamB2: Zanesville, soft bedrock substratum-----	Limited rooting depth (fragipan), low pH, water erosion.
ZamC2: Zanesville, soft bedrock substratum-----	Limited rooting depth (fragipan), low pH, water erosion.
ZamC3: Zanesville, soft bedrock substratum-----	Limited rooting depth (fragipan), low pH, water erosion.
ZamD2: Zanesville, soft bedrock substratum-----	Equipment limitation (slope), limited rooting depth (fragipan), low pH, water erosion.
ZamD5: Zanesville, soft bedrock substratum-----	Equipment limitation (slope), limited rooting depth (fragipan), low pH, water erosion, low available water capacity.
ZapD3: Zanesville, soft bedrock substratum-----	Equipment limitation(slope), limited rooting depth (fragipan), low pH, water erosion.
Tulip-----	Equipment limitation (slope), low pH, water erosion.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil.)

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Orchardgrass- red clover hay	Soybeans	Tall fescue- ladino	Winter wheat
		Tons	Bu	Tons	Bu	AUM*	Bu
AbgAU----- Adrian	7w	---	---	---	---	---	---
AfeC----- Alvin, Bloomfield	3e	3.5	69.0	2.3	24.0	4.6	31.0
AfeD----- Alvin, Bloomfield	4e	2.7	54.0	1.8	19.0	3.6	24.0
AffE----- Alvin, Bloomfield, Princeton	6e	2.3	---	1.5	---	3.0	---
AfsB----- Alvin, Princeton	2e	4.7	95.0	3.1	33.0	6.3	43.0
AfsC----- Alvin, Princeton	3e	4.2	85.0	2.8	30.0	5.6	38.0
AftD----- Alvin, Princeton	4e	3.5	69.0	2.3	24.0	4.6	31.0
AhrAK----- Armiesburg	2w	6.5	130.0	4.3	45.0	8.6	50.0
AkeB2----- Arney	2e	5.8	115.0	3.8	40.0	7.8	52.0
AloB2----- Ava	2e	4.5	92.0	3.0	32.0	6.0	41.0
AmkA----- Ayrshire	2w	---	115.0	3.8	40.0	7.6	46.0
BdxAV----- Belknap	2w	---	112.0	---	39.0	---	---
BgeAH----- Birds	5w	---	---	---	---	---	---
BodAV----- Bonnie	3w	---	110.0	---	39.0	---	---
CkkB2----- Cincinnati	2e	4.5	90.0	3.0	32.0	6.0	41.0
CkkC2----- Cincinnati	3e	2.8	85.0	2.8	30.0	5.6	36.0
CkkC3----- Cincinnati	4e	2.5	75.0	2.5	26.0	5.0	34.0

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Orchardgrass- red clover hay	Soybeans	Tall fescue- ladino	Winter wheat
		Tons	Bu	Tons	Bu	AUM*	Bu
CkkD2----- Cincinnati	4e	2.2	65.0	2.2	23.0	4.4	29.0
CkkD3----- Cincinnati	6e	2.0	---	2.0	---	4.0	---
CspC2----- Crider	3e	3.3	100.0	3.3	35.0	6.6	40.0
CspC3----- Crider	4e	3.1	95.0	3.1	33.0	6.2	38.0
DfnA----- Dubois	2w	---	115.0	3.8	40.0	7.6	53.0
EadD2----- Ebal	4e	3.0	---	2.0	---	4.0	25.0
GaaE2----- Gallimore	6e	---	---	---	---	4.0	---
GabG----- Gallimore, Chetwynd	7e	---	---	---	---	---	---
GblAH----- Gessie	2w	---	105.0	---	37.0	---	---
GmcD3----- Grayford	6e	3.2	---	2.1	---	4.2	---
GmcE2----- Grayford	6e	2.9	---	1.9	---	3.8	---
GmhD2----- Grayford, Ryker	4e	3.9	77.0	2.6	27.0	5.2	31.0
GmpE2----- Greybrook	6e	4.5	---	3.0	---	6.0	---
GmpF----- Greybrook	7e	---	---	---	---	---	---
HarD2----- Haggatt	4e	---	55.0	1.8	19.0	3.6	25.0
HarD3----- Haggatt	6e	---	---	1.7	---	3.4	---
HasE2----- Haggatt, Caneyville	6e	1.8	---	1.2	---	2.4	---
HccA----- Haubstadt	2w	4.7	95.0	3.1	33.0	6.2	43.0
HccB2----- Haubstadt	2e	4.5	90.0	3.0	32.0	6.0	41.0

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Orchardgrass- red clover hay	Soybeans	Tall fescue- ladino	Winter wheat
		Tons	Bu	Tons	Bu	AUM*	Bu
HccC3----- Haubstadt	4e	3.8	75.0	2.5	26.0	5.0	34.0
HcgAH----- Haymond	2w	---	120.0	---	42.0	---	---
HchA----- Haymond	2w	6.2	125.0	4.1	44.0	8.2	50.0
HefG----- Hickory	7e	---	---	---	---	---	---
Held2----- Hickory, Stinesville	4e	3.8	77.0	2.5	27.0	5.1	31.0
HeoE----- Hickory	6e	3.2	---	2.1	---	4.2	---
HeoE3----- Hickory	6e	3.0	---	2.0	---	4.0	---
HeoG----- Hickory	7e	---	---	---	---	---	---
HepG----- Hickory, Adyeville	7e	---	---	---	---	---	---
HesG----- Hickory, Chetwynd	7e	---	---	---	---	---	---
HeuE----- Hickory, Wellston	6e	3.3	---	2.2	---	4.4	---
HeuF----- Hickory, Wellston	7e	---	---	---	---	---	---
HkaB----- Hollybrook	3w	4.1	82.0	2.7	29.0	5.4	33.0
HleAV----- Holton	2w	---	100.0	---	35.0	---	---
HnoA----- Hoosierville	3w	---	145.0	4.8	50.0	9.6	58.0
Lnfa----- Lieber	2w	---	120.0	4.0	42.0	8.0	48.0
Lnfb----- Lieber	2e	---	120.0	4.0	42.0	8.0	48.0
MecA----- Martinsville	1	6.1	120.0	4.0	42.0	8.0	48.0
MecAQ----- Martinsville	1	6.1	120.0	4.0	48.0	8.0	48.0

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Orchardgrass- red clover hay	Soybeans	Tall fescue- ladino	Winter wheat
		Tons	Bu	Tons	Bu	AUM*	Bu
MecB----- Martinsville	2e	6.1	120.0	4.0	42.0	8.0	48.0
MhhAH----- McAdoo	2w	---	115.0	3.7	40.0	---	---
MhhAK----- McAdoo	2w	6.1	120.0	4.0	42.0	8.0	45.0
MhuA----- McGary	3w	---	100.0	3.3	35.0	6.6	45.0
MrcG----- Minnehaha	7e	---	---	---	---	---	---
MsvA----- Montgomery	3w	---	120.0	4.0	42.0	8.0	48.0
MvrAH----- Moundhaven	3w	---	45.0	1.7	15.0	---	---
NbhAH----- Newark	2w	---	125.0	4.1	44.0	---	---
OfaAV----- Oldenburg	2w	---	100.0	---	35.0	---	---
OfcAV----- Oldenburg	2w	---	90.0	---	32.0	---	---
OfeB----- Olephant	2e	6.1	120.0	4.0	42.0	8.0	48.0
OmkC2----- Otwell	3e	3.9	80.0	2.6	28.0	5.2	36.0
OmkC3----- Otwell	4e	3.8	75.0	2.5	26.0	5.0	34.0
OmkD3----- Otwell	6e	3.0	---	2.0	---	4.0	---
PbbC2----- Parke	3e	5.0	100.0	3.3	35.0	6.6	45.0
PbbC3----- Parke	4e	4.7	95.0	3.1	33.0	6.2	43.0
PbbD2----- Parke	4e	4.2	85.0	2.8	30.0	5.6	38.0
PbbD3----- Parke	6e	3.9	---	2.6	---	5.2	---
PcnA----- Patrickburg	2w	---	110.0	3.6	39.0	7.2	50.0
PcrAQ----- Pekin	2w	4.7	95.0	3.1	33.0	6.8	43.0

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Orchardgrass- red clover hay	Soybeans	Tall fescue- ladino	Winter wheat
		Tons	Bu	Tons	Bu	AUM*	Bu
PcrB2----- Pekin	2e	4.5	90.0	3.0	31.0	6.8	40.0
PcrC2----- Pekin	3e	3.9	80.0	2.6	28.0	5.6	36.0
PhaA----- Peoga	3w	---	120.0	4.0	42.0	7.9	48.0
PhaAP----- Peoga	7w	---	---	---	---	---	---
PlcAV----- Piankeshaw	2s	---	100.0	3.3	35.0	---	---
PlfA----- Pike	1	6.1	120.0	4.0	42.0	8.0	48.0
PlfB2----- Pike	2e	5.8	115.0	3.7	40.0	7.6	46.0
Pml: Pits, quarry.							
PrwAV----- Pope	2w	---	80.0	---	28.0	---	---
PryB----- Potawatomi	2w	5.8	115.0	3.7	40.0	7.6	52.0
PsaD3----- Pottersville	6e	4.2	---	2.8	---	5.6	---
PsaG----- Pottersville	7e	---	---	---	---	---	---
PsbF----- Pottersville	7e	---	---	---	---	---	---
Rnn: Riverwash.							
RpzG----- Romona, Corydon, Rock outcrop---	7e ---	---	---	---	---	---	---
RtcC3----- Ryker	4e	5.2	105.0	3.4	37.0	6.8	42.0
SfoA----- Shakamak	2e	5.3	105.0	3.5	37.0	7.0	47.0
SfyB2----- Shircliff	3e	3.9	80.0	2.6	28.0	5.4	36.0
SfyC2----- Shircliff	4e	3.5	70.0	2.3	25.0	4.6	32.0
SneC2----- Solsberry	3e	3.9	80.0	2.6	28.0	5.3	36.0

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Orchardgrass- red clover hay	Soybeans	Tall fescue- ladino	Winter wheat
		Tons	Bu	Tons	Bu	AUM*	Bu
SneC3----- Solsberry	4e	3.5	70.0	2.3	25.0	4.6	32.0
SneD2----- Solsberry	4e	3.5	70.0	2.3	25.0	4.8	32.0
SneD3----- Solsberry	6e	3.0	---	2.0	---	4.0	---
SneD5----- Solsberry	6e	---	---	---	---	3.0	---
StaAV----- Steff	2e	---	110.0	---	39.0	---	---
StdAH----- Stendal	2w	---	120.0	---	42.0	---	---
StfB2----- Stinesville	2e	5.8	115.0	3.8	40.0	7.6	46.0
StfC2----- Stinesville	3e	5.3	105.0	3.5	37.0	7.0	42.0
StgC2----- Stinesville, Ryker, Grayford	2e	5.3	105.0	3.5	37.0	7.0	42.0
StgD2----- Stinesville, Ryker, Grayford	4e	4.7	---	3.1	---	6.2	---
SupAH----- Stonelick	3w	---	80.0	---	28.0	---	---
SwhG----- Stubenville, Hickory	7e	---	---	---	---	---	---
TadA----- Taggart	2w	---	135.0	4.5	47.0	8.9	54.0
TahB----- Tapawingo, Nawakwa	2e	2.6	60.0	2.0	21.0	4.0	24.0
TcgG----- Tipsaw, Rock outcrop	7e	---	---	---	---	---	---
TtaG----- Tulip, Tipsaw	7e	---	---	---	---	---	---
TtcE----- Tulip, Wellston, Adyeville	6e	---	---	---	---	3.8	---
Uaa: Udorthents.							

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Orchardgrass- red clover hay	Soybeans	Tall fescue- ladino	Winter wheat
		Tons	Bu	Tons	Bu	AUM*	Bu
VdgA----- Vigo	2w	---	120.0	4.0	42.0	8.0	48.0
W: Water.							
WeaA----- Wea, Elston	2s	5.2	104.0	---	36.0	---	47.0
WeaAQ----- Wea, Elston	2s	5.2	104.0	3.4	36.0	6.8	47.0
WhfD2----- Wellston	4e	3.8	75.0	2.5	26.0	5.0	30.0
WlmaK----- Whitaker	2w	---	115.0	3.8	40.0	7.6	40.0
WokAH----- Wilbur	2w	---	120.0	---	42.0	---	---
WolAI----- Wilhite	4w	---	80.0	---	28.0	---	---
WomAH----- Wilhite	4w	---	85.0	---	30.0	---	---
WprAQ----- Wirt	1	5.3	105.0	3.5	37.0	7.0	42.0
WpuAK----- Wirt	2w	5.0	100.0	3.3	35.0	6.6	38.0
WpuAV----- Wirt	2w	---	95.0	---	33.0	---	---
WpyBJ----- Wirt, Pekin	8w	---	---	---	---	---	---
ZamB2----- Zanesville	2e	4.7	95.0	3.1	33.0	6.2	43.0
ZamC2----- Zanesville	3e	4.2	85.0	2.8	30.0	5.6	38.0
ZamC3----- Zanesville	4e	3.9	80.0	2.6	28.0	5.2	36.0
ZamD2----- Zanesville	4e	3.5	70.0	2.3	25.0	4.6	32.0
ZamD5----- Zanesville	6e	---	---	---	---	---	---
ZapD3----- Zanesville, Tulip	6e	3.6	---	2.4	---	4.8	---

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Table 8.--Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name.)

Map symbol	Soil name
AfsB	Alvin-Princeton fine sandy loams, 2 to 6 percent slopes
AhrAK	Armiesburg silty clay loam, 0 to 2 percent slopes, occasionally flooded, brief duration
AkeB2	Arney silt loam, 2 to 6 percent slopes, eroded
AloB2	Ava silt loam, 2 to 6 percent slopes, eroded
AmkA	Ayrshire fine sandy loam, 0 to 2 percent slopes (where drained)
BdxAV	Belknap silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration (where drained and either protected from flooding or not frequently flooded during the growing season)
BgeAH	Birds silt loam, 0 to 1 percent slopes, frequently flooded, brief duration (where drained and either protected from flooding or not frequently flooded during the growing season)
BodAV	Bonnie silt loam, 0 to 1 percent slopes, frequently flooded, very brief duration (where drained and either protected from flooding or not frequently flooded during the growing season)
CkkB2	Cincinnati silt loam, 2 to 6 percent slopes, eroded
DfnA	Dubois silt loam, 0 to 2 percent slopes (where drained)
GblAH	Gessie silt loam, 0 to 2 percent slopes, frequently flooded, brief duration (where protected from flooding or not frequently flooded during the growing season)
HccA	Haubstadt silt loam, 0 to 2 percent slopes
HccB2	Haubstadt silt loam, 2 to 6 percent slopes, eroded
HcgAH	Haymond silt loam, 0 to 2 percent slopes, frequently flooded, brief duration (where protected from flooding or not frequently flooded during the growing season)
HchA	Haymond silt loam, sinkhole, 0 to 2 percent slopes
HkaB	Hollybrook silt loam, 1 to 5 percent slopes (where subsoiled, completely removing the root inhibiting soil layer)
HleAV	Holton silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration (where drained and either protected from flooding or not frequently flooded during the growing season)
HnoA	Hoosierville silt loam, 0 to 1 percent slopes (where drained)
LnfA	Lieber silt loam, 0 to 2 percent slopes (where drained)
LnfB	Lieber silt loam, 2 to 4 percent slopes (where drained)
MecA	Martinsville loam, 0 to 2 percent slopes
MecAQ	Martinsville loam, 0 to 2 percent slopes, rarely flooded
MecB	Martinsville loam, 2 to 6 percent slopes
MhhAH	McAdoo silt loam, 0 to 2 percent slopes, frequently flooded, brief duration (where protected from flooding or not frequently flooded during the growing season)
MhhAK	McAdoo silt loam, 0 to 2 percent slopes, occasionally flooded, brief duration
MhuA	McGary silt loam, 0 to 2 percent slopes (where drained)
MsvA	Montgomery silty clay loam, 0 to 1 percent slopes (where drained)
NbhAH	Newark silt loam, 0 to 2 percent slopes, frequently flooded, brief duration (where drained and either protected from flooding or not frequently flooded during the growing season)
OfaAV	Oldenburg silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration (where protected from flooding or not frequently flooded during the growing season)
OfcAV	Oldenburg fine sandy loam, sandy substratum, 0 to 2 percent slopes, frequently flooded, very brief duration (where protected from flooding or not frequently flooded during the growing season)
OfeB	Olephant silt loam, 1 to 3 percent slopes
PcnA	Patrickburg silt loam, 0 to 2 percent slopes (where drained)
PcrAQ	Pekin silt loam, 0 to 2 percent slopes, rarely flooded
PcrB2	Pekin silt loam, 2 to 6 percent slopes, eroded
PhaA	Peoga silt loam, 0 to 1 percent slopes (where drained)
PlcAV	Piankeshaw silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration (where protected from flooding or not frequently flooded during the growing season)
PlfA	Pike silt loam, 0 to 2 percent slopes
PlfB2	Pike silt loam, 2 to 6 percent slopes, eroded
PrwAV	Pope fine sandy loam, 0 to 2 percent slopes, frequently flooded, very brief duration (where protected from flooding or not frequently flooded during the growing season)
PryB	Potawatomi silt loam, 1 to 3 percent slopes
SfoA	Shakamak silt loam, 1 to 3 percent slopes
SfyB2	Shircliff silt loam, 2 to 6 percent slopes, eroded
StaAV	Steff silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration (where protected from flooding or not frequently flooded during the growing season)
StdAH	Stendal silt loam, 0 to 2 percent slopes, frequently flooded, brief duration (where drained and either protected from flooding or not frequently flooded during the growing season)
StfB2	Stinesville silt loam, 2 to 6 percent slopes, eroded

Table 8.--Prime Farmland--Continued

Map symbol	Soil name
SupAH	Stonelick sandy loam, 0 to 2 percent slopes, frequently flooded, brief duration (where protected from flooding or not frequently flooded during the growing season)
TadA	Taggart silt loam, 0 to 2 percent slopes (where drained)
VdgA	Vigo silt loam, 0 to 2 percent slopes (where drained)
WeaA	Wea, sandy substratum-Elston complex, 0 to 2 percent slopes
WeaAQ	Wea, sandy substratum-Elston complex, 0 to 2 percent slopes, rarely flooded
WlmAK	Whitaker loam, 0 to 2 percent slopes, occasionally flooded, brief duration (where drained)
WokAH	Wilbur silt loam, 0 to 2 percent slopes, frequently flooded, brief duration (where protected from flooding or not frequently flooded during the growing season)
WomAH	Wilhite silty clay loam, 0 to 1 percent slopes, frequently flooded, brief duration (where drained and either protected from flooding or not frequently flooded during the growing season)
WprAQ	Wirt loam, 0 to 2 percent slopes, rarely flooded
WpuAK	Wirt silt loam, 0 to 2 percent slopes, occasionally flooded, brief duration
WpuAV	Wirt silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration (where protected from flooding or not frequently flooded during the growing season)
ZamB2	Zanesville silt loam, soft bedrock substratum, 2 to 6 percent slopes, eroded

Table 9.--Windbreaks and Environmental Plantings

(Only the soils suitable for windbreaks and environmental plantings are listed. Absence of an entry indicates that trees generally do not grow to the given height.)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
AbgAU: Adrian.					
AfeC, AfeD: Alvin-----	American plum, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf arrowwood.	Blackhaw, hazelnut, shadbush, witchhazel.	Baldcypress, eastern redcedar, green ash, northern whitecedar, southern red oak, tuliptree.	Norway spruce, common hackberry, eastern white pine, pin oak.	Eastern cottonwood.
Bloomfield-----	American plum, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf arrowwood.	Blackhaw, hazelnut, shadbush, witchhazel.	Baldcypress, eastern redcedar, green ash, northern whitecedar, southern red oak, tuliptree.	Norway spruce, common hackberry, eastern white pine, pin oak.	Eastern cottonwood.
AffE: Alvin-----	American plum, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf arrowwood.	Blackhaw, hazelnut, shadbush, witchhazel.	Baldcypress, eastern redcedar, green ash, northern whitecedar, southern red oak, tuliptree.	Norway spruce, common hackberry, eastern white pine, pin oak.	Eastern cottonwood.
Bloomfield-----	American plum, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf arrowwood.	Blackhaw, hazelnut, shadbush, witchhazel.	Baldcypress, eastern redcedar, green ash, northern whitecedar, southern red oak, tuliptree.	Norway spruce, common hackberry, eastern white pine, pin oak.	Eastern cottonwood.
Princeton-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
AfsB, AfsC, AftD: Alvin-----	American plum, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf arrowwood.	Blackhaw, hazelnut, shadbush, witchhazel.	Baldcypress, eastern redcedar, green ash, northern whitecedar, southern red oak, tuliptree.	Norway spruce, common hackberry, eastern white pine, pin oak.	Eastern cottonwood.
Princeton-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.

Table 9.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
AhrAK:					
Armiesburg-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
AkeB2:					
Arney-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
AloB2:					
Ava-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
AmkA:					
Ayrshire-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
BdxAV:					
Belknap-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
BgeAH:					
Birds-----	Black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	American plum, blackhaw, nannyberry, roughleaf dogwood.	Eastern redcedar, hackberry, northern whitecedar, shadbush, witchhazel.	Norway spruce, baldcypress, eastern white pine, green ash, southern red oak, tuliptree.	Eastern cottonwood, pin oak.
BodAV:					
Bonnie-----	Black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	American plum, blackhaw, nannyberry, roughleaf dogwood.	Eastern redcedar, hackberry, northern whitecedar, shadbush, witchhazel.	Norway spruce, baldcypress, eastern white pine, green ash, southern red oak, tuliptree.	Eastern cottonwood, pin oak.

Table 9.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
CkkB2, CkkC2, CkkC3, CkkD2, CkkD3:					
Cincinnati-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
CspC2, CspC3:					
Crider-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
DfnA:					
Dubois-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
EaaD2:					
Ebal-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
GaaE2:					
Gallimore-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
GabG:					
Gallimore-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Chetwynd-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
GblAH:					
Gessie-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.

Table 9.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
GmcD3, GmcE2: Grayford-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
GmhD2: Grayford-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Ryker-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
GmpE2, GmpF: Greybrook-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
HarD2, HarD3: Haggatt-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
HasE2: Haggatt-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Caneyville-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Alternateleaf dogwood, eastern redcedar, hazelnut, nannyberry, northern whitecedar, shadbush.	Eastern white pine, green ash.	---	---
HccA, HccE2, HccC3: Haubstadt-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.

Table 9.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
HcgAH, HchA: Haymond-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
HefG, HeoE, HeoE3, HeoG: Hickory-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Held2: Hickory-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Stinesville-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
HepG: Hickory-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Adyeville-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Alternateleaf dogwood, eastern redcedar, hazelnut, nannyberry, northern whitecedar, shadbush.	Eastern white pine, green ash.	---	---
HesG: Hickory-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Chetwynd-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.

Table 9.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
HeuE, HeuF: Hickory-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Wellston-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
HkaB: Hollybrook-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
HleAV: Holton-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
HnoA: Hoosierville----	Black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	American plum, blackhaw, nannyberry, roughleaf dogwood.	Eastern redcedar, hackberry, northern whitecedar, shadbush, witchhazel.	Norway spruce, baldcypress, eastern white pine, green ash, southern red oak, tuliptree.	Eastern cottonwood, pin oak.
LnfA, LnfB: Lieber-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
MecA, MecAQ, MecB: Martinsville----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
MhhAH, MhhAK: McAdoo-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.

Table 9.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
MhuA:					
McGary-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
MrcG:					
Minnehaha-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Alternateteleaf dogwood, eastern redcedar, hazelnut, nannyberry, northern whitecedar, shadbush.	Eastern white pine, green ash.	---	---
MsvA:					
Montgomery-----	Black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	American plum, blackhaw, nannyberry, roughleaf dogwood.	Eastern redcedar, hackberry, northern whitecedar, shadbush, witchhazel.	Norway spruce, baldcypress, eastern white pine, green ash, southern red oak, tuliptree.	Eastern cottonwood, pin oak.
MvrAH:					
Moundhaven-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
NbhAH:					
Newark-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
OfaAV, OfcAV:					
Oldenburg-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
OfeB:					
Olephant-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.

Table 9.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
OmK2, OmK3, OmK3:					
Otwell-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
PbbC2, PbbC3, PbbD2, PbbD3:					
Parke-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
PcnA:					
Patrickburg---	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
PcrA2, PcrB2, PcrC2:					
Pekin-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood
PhaA, PhaAP:					
Peoga-----	Black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	American plum, blackhaw, nannyberry, roughleaf dogwood.	Eastern redcedar, hackberry, northern whitecedar, shadbush, witchhazel.	Norway spruce, baldcypress, eastern white pine, green ash, southern red oak, tuliptree.	Eastern cottonwood, pin oak.
PlcAV:					
Piankeshaw-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
PlfA, PlfB2:					
Pike-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Pml:					
Pits, quarry.					

Table 9.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
PrwAH: Pope-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
PryB: Potawatomie-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
PsaD3, PsaG, PsbF: Pottersville----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Rnn: Riverwash.					
RpzG: Romona-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Alternatleaf dogwood, eastern redcedar, hazelnut, nannyberry, northern whitecedar, shadbush.	Eastern white pine, green ash.	---	---
Corydon-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Alternatleaf dogwood, eastern redcedar, hazelnut, nannyberry, northern whitecedar, shadbush.	Eastern white pine, green ash.	---	---
Rock outcrop.					
RtcC3: Ryker-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
SfoA: Shakamak-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.

Table 9.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
SfyB2, SfyC2: Shircliff-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
SneC2, SneC3, SneD2 SneD3, SneD5: Solsberry-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
StaAV: Steff-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
StdAH: Stendal-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
StfB2, StfC2: Stinesville----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
StgC2, StgD2: Stinesville----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Ryker-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Grayford-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.

Table 9.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
SupAH:					
Stonelick-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
SwhG:					
Stubenville----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Hickory-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
TadA:					
Taggart-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
TahB:					
Tapawingo-----	American plum, black chokeberry, blackhaw, gray dogwood, mapleleaf arrowwood.	Cock's-spur hawthorn, eastern redcedar, eastern white pine, nannyberry, shadbush.	Black locust, thornless honey locust.	---	---
Nawakwa-----	American plum, black chokeberry, blackhaw, gray dogwood, mapleleaf arrowwood.	Cock's-spur hawthorn, eastern redcedar, eastern white pine, nannyberry, shadbush.	Black locust, thornless honey locust.	---	---
TcgG:					
Tipsaw-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Alternateleaf dogwood, eastern redcedar, hazelnut, nannyberry, northern whitecedar, shadbush.	Eastern white pine, green ash.	---	---
Rock outcrop.					

Table 9.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
TtaG:					
Tulip-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Tipsaw-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Alternatelyleaf dogwood, eastern redcedar, hazelnut, nannyberry, northern whitecedar, shadbush.	Eastern white pine, green ash.	---	---
TtcE:					
Tulip-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Wellston-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
Adyeville-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Alternatelyleaf dogwood, eastern redcedar, hazelnut, nannyberry, northern whitecedar, shadbush.	Eastern white pine, green ash.	---	---
Uaa:					
Udorthents.					
VdgA:					
Vigo-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
W:					
Water.					
WeaA, WeaAQ:					
Wea-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.

Table 9.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
WeaA, WeaAQ: Elston-----	American plum, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf arrowwood.	Blackhaw, hazelnut, shadbush, witchhazel.	Baldcypress, eastern redcedar, green ash, northern whitecedar, southern red oak, tuliptree.	Norway spruce, common hackberry, eastern white pine, pin oak.	Eastern cottonwood.
WhfD2: Wellston-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
WlmAK: Whitaker-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
WokAH: Wilbur-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
WolAI, WomAH: Wilhite-----	Black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	American plum, blackhaw, nannyberry, roughleaf dogwood.	Eastern redcedar, hackberry, northern whitecedar, shadbush, witchhazel.	Norway spruce, baldcypress, eastern white pine, green ash, southern red oak, tuliptree.	Eastern cottonwood, pin oak.
WprAQ, WpuAK, WpuAV: Wirt-----	Black chokeberry, common winterberry, coralberry, mapleleaf arrowwood, silky dogwood.	American plum, rusty blackhaw, shadbush.	Washington hawthorn, eastern redcedar, nannyberry, northern whitecedar, southern red oak.	Norway spruce, baldcypress, common hackberry, green ash, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.
WpyBJ: Wirt.					
Pekin.					
ZamB2, ZamC2, ZamC3 ZamD2, ZamD5: Zanesville-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.

Table 9.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
ZapD3: Zanesville-----	American plum, black chokeberry, coralberry, gray dogwood, mapleleaf arrowwood.	Washington hawthorn, blackhaw, hazelnut, nannyberry, shadbush.	Baldcypress, eastern redcedar, green ash, northern whitecedar.	Norway spruce, eastern white pine, pin oak.	Eastern cottonwood.
Tulip-----	Coralberry, gray dogwood, mapleleaf arrowwood, redosier dogwood.	American plum, blackhaw, hazelnut, roughleaf dogwood.	Eastern redcedar, nannyberry, northern whitecedar, shadbush.	Norway spruce, baldcypress, green ash, hackberry, tuliptree.	Eastern cottonwood, eastern white pine, pin oak.

Table 10.--Forestland Management and Productivity

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available.)

Map symbol and soil name	Ordi-nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Wind-throw hazard	Plant competi-tion	Common trees	Site index	Volume of wood fiber*	
AbgAU:										
Adrian-----	2W	Slight	Severe	Severe	Severe	Severe	Red maple-----	51	29	Eastern
							Silver maple-----	76	29	cottonwood,
							White ash-----	51	29	green ash, red
							Quaking aspen-----	56	57	maple, silver
							Black willow-----	---	---	maple, white ash.
AfeC:										
Alvin-----	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak---	80	57	Black walnut,
							Black walnut-----	---	---	eastern white
							Tuliptree-----	90	86	pine, green
							White oak-----	80	57	ash, northern
										red oak,
										tuliptree,
										white ash,
										white oak.
Bloomfield-----	4S	Slight	Slight	Moderate	Slight	Slight	Black oak-----	70	57	Black oak,
							Shagbark hickory---	---	---	chinkapin oak,
							White oak-----	---	---	eastern
							Scarlet oak-----	---	---	redcedar,
										eastern white
										pine, green
										ash, white oak.
AfeD:										
Alvin-----	4R	Moderate	Moderate	Slight	Slight	Moderate	Northern red oak---	80	57	Black walnut,
							Black walnut-----	---	---	eastern white
							Tuliptree-----	90	86	pine, green
							White oak-----	80	57	ash, northern
										red oak,
										tuliptree,
										white ash,
										white oak.
Bloomfield-----	4R	Moderate	Moderate	Moderate	Slight	Slight	Black oak-----	70	57	Black oak,
							Shagbark hickory---	---	---	chinkapin oak,
							White oak-----	---	---	eastern
							Scarlet oak-----	---	---	redcedar,
										eastern white
										pine, green
										ash, white oak.
AffE:										
Alvin-----	4R	Moderate	Moderate	Slight	Slight	Moderate	Northern red oak---	80	57	Black walnut,
							Black walnut-----	---	---	eastern white
							Tuliptree-----	90	86	pine, green
							White oak-----	80	57	ash, northern
										red oak,
										tuliptree,
										white ash,
										white oak.

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
AffE: Bloomfield-----	4R	Moderate	Moderate	Moderate	Slight	Slight	Black oak----- Shagbark hickory---- White oak----- Scarlet oak-----	70 --- --- ---	57 --- --- ---	Black oak, chinkapin oak, eastern redcedar, eastern white pine, green ash, white oak.
Princeton-----	5R	Moderate	Moderate	Slight	Slight	Moderate	White oak----- Sweetgum----- Tuliptree-----	90 76 98	72 72 100	Black cherry, black oak, black walnut, eastern white pine, northern red oak, Tuliptree, white ash, white oak.
AfsB, AfsC: Alvin-----	4A	Slight	Slight	Slight	Slight	Moderate	Northern red oak---- Black walnut----- Tuliptree----- White oak-----	80 --- 90 80	57 --- 86 57	Black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
Princeton-----	5A	Slight	Slight	Slight	Slight	Moderate	White oak----- Sweetgum----- Tuliptree-----	90 76 98	72 72 100	Black cherry, black oak, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak.
AftD: Alvin-----	4R	Moderate	Moderate	Slight	Slight	Moderate	Northern red oak---- Black walnut----- Tuliptree----- White oak-----	80 --- 90 80	57 --- 86 57	Black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
Princeton-----	5A	Slight	Moderate	Slight	Slight	Moderate	White oak----- Sweetgum----- Tuliptree-----	90 76 98	72 72 100	Black cherry, black oak, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak.

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
AhrAK: Armiesburg-----	8A	Slight	Slight	Slight	Slight	Severe	Tuliptree----- Black walnut----- White oak-----	100 70 90	114 --- 72	Black cherry, black walnut, bur oak, eastern white pine, red maple, swamp white oak, tuliptree.
AkeB2: Arney-----	5A	Slight	Slight	Slight	Slight	Severe	White oak----- Sweetgum----- Tuliptree-----	85 73 96	72 57 100	Black cherry, black walnut, green ash, northern red oak, tuliptree, white ash, white oak.
AloB2: Ava-----	4R	Slight	Slight	Slight	Moderate	Severe	White oak----- Black walnut----- Tuliptree----- Northern red oak---	75 --- 90 80	57 --- 86 57	Virginia pine, black oak, eastern white pine, red pine, tuliptree, white ash.
AmkA: Ayrshire-----	5A	Slight	Moderate	Slight	Slight	Severe	White oak----- Sweetgum----- Tuliptree----- Pin oak-----	85 100 100 100	72 143 114 86	American sycamore, bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum, tuliptree, white ash.
BdxAV: Belknap-----	6A	Slight	Moderate	Slight	Moderate	Severe	Tuliptree----- Sweetgum----- American sycamore--- Eastern cottonwood-- Pin oak-----	90 --- --- 100 90	86 --- --- 129 72	American sycamore, eastern cottonwood, green ash, red maple, sweetgum.
BgeAH: Birds-----	5W	Slight	Severe	Severe	Severe	Severe	Pin oak----- Sweetgum----- American sycamore--- Eastern cottonwood-- Cherrybark oak-----	90 --- --- 100 ---	72 --- --- 129 ---	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, swamp white oak, sweetgum.

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Plant competition	Common trees	Site index	Volume of wood fiber*	
BodAV: Bonnie-----	5W	Slight	Severe	Severe	Severe	Severe	Pin oak----- Sweetgum----- American sycamore--- Eastern cottonwood-- Cherrybark oak-----	90 --- --- 100 ---	72 --- --- 129 ---	American sycamore, bur oak, eastern cottonwood, green ash, pin oak, red maple, swamp white oak, sweetgum.
CkkB2, CkkC2, CkkC3: Cincinnati-----	4D	Slight	Slight	Slight	Moderate	Moderate	Northern red oak---- Sugar maple----- American beech----- American sycamore--- White oak----- Slippery elm-----	80 --- --- --- --- ---	57 --- --- --- --- ---	Black oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
CkkD2, CkkD3: Cincinnati-----	4R	Moderate	Moderate	Slight	Moderate	Moderate	Northern red oak---- Sugar maple----- American beech----- American sycamore--- White oak----- Slippery elm-----	80 --- --- --- --- ---	57 --- --- --- --- ---	Virginia pine, black locust, black oak, eastern white pine, northern red oak, tuliptree, white ash, white oak.
CspC2, CspC3: Crider-----	7A	Slight	Slight	Slight	Slight	Severe	Tuliptree----- Sugar maple----- Hickory----- White ash----- Black walnut----- White oak----- Northern red oak--- Black oak-----	97 --- --- --- 80 72 84 87	100 --- --- --- --- 57 72 72	Black cherry, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak.
DfnA: Dubois-----	5D	Slight	Moderate	Slight	Moderate	Severe	Pin oak----- Tuliptree----- Northern red oak---	85 95 80	72 100 57	American sycamore, Shumard's oak, bur oak, green ash, pin oak, swamp white oak, sweetgum, white ash.
EaaD2: Ebal-----	4C	Slight	Moderate	Moderate	Moderate	Moderate	Black oak----- Tuliptree----- Northern red oak---	80 --- ---	57 --- ---	Black oak, eastern white pine, green ash, northern red oak, tuliptree, white oak.

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
GaaE2: Gallimore-----	7R	Moderate	Moderate	Moderate	Slight	Moderate	Tuliptree----- Northern red oak----	98 98	100 86	Black cherry, eastern white pine, green ash, northern red oak, tuliptree, white oak.
GabG: Gallimore-----	7R	Severe	Severe	Moderate	Slight	Moderate	Tuliptree----- Northern red oak----	98 98	100 86	Black cherry, eastern white pine, green ash, northern red oak, tuliptree, white oak.
Chetwynd-----	7R	Severe	Severe	Slight	Slight	Severe	Tuliptree----- Northern red oak----	99 88	100 72	Black cherry, eastern white pine, green ash, northern red oak, tuliptree, white oak.
GblAH: Gessie-----	8A	Slight	Moderate	Moderate	Slight	Severe	Tuliptree-----	98	100	American sycamore, Shumard's oak, bur oak, green ash, swamp white oak, sweetgum, white ash.
GmcD3: Grayford-----	5A	Slight	Moderate	Slight	Slight	Moderate	White oak----- Sweetgum----- Tuliptree-----	90 76 98	72 72 100	Black cherry, eastern white pine, green ash, northern red oak, tuliptree, white oak.
GmcE2: Grayford-----	5R	Moderate	Moderate	Slight	Slight	Moderate	White oak----- Sweetgum----- Tuliptree-----	90 76 98	72 72 100	Black cherry, eastern white pine, green ash, northern red oak, tuliptree, white oak.
GmhD2: Grayford-----	5A	Slight	Moderate	Slight	Slight	Moderate	White oak----- Sweetgum----- Tuliptree-----	90 76 98	72 72 100	Black cherry, eastern white pine, green ash, northern red oak, tuliptree, white oak.

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
GmhD2: Ryker-----	5A	Moderate	Moderate	Slight	Slight	Severe	White oak----- Sweetgum----- Tuliptree-----	90 76 98	72 72 100	Black cherry, black oak, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
GmpE2, GmpF: Greybrook-----	5R	Moderate	Moderate	Moderate	Slight	Severe	Northern red oak--- Sugar maple----- Tuliptree----- Black oak-----	84 82 99 95	72 57 100 72	Black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
HarD2, HarD3: Haggatt-----	4R	Moderate	Moderate	Slight	Slight	Moderate	White oak----- Tuliptree-----	68 86	57 86	Virginia pine, black locust, black oak, chinkapin oak, eastern white pine, northern red oak, tuliptree, white ash, white oak.
HasE2: Haggatt-----	4R	Moderate	Moderate	Slight	Slight	Moderate	White oak----- Tuliptree-----	68 86	57 86	Virginia pine, black locust, black oak, eastern white pine, chinkapin oak, northern red oak, tuliptree, white ash, white oak.
Caneyville-----	4R	Severe	Moderate	Slight	Slight	Moderate	Black oak----- Sugar maple----- Hickory----- White ash----- Eastern redcedar--- Tuliptree----- White oak-----	71 --- --- 72 46 90 64	57 --- --- 43 57 86 43	Virginia pine, black oak, eastern white pine, green ash, northern red oak, chinkapin oak, tuliptree.

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
HccA, HccB2, HccC3: Haubstadt-----	4D	Slight	Slight	Slight	Moderate	Severe	Northern red oak----	80	57	Black oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
							Sugar maple-----	---	---	
							American beech-----	---	---	
							White ash-----	---	---	
							American sycamore---	---	---	
							White oak-----	---	---	
							Slippery elm-----	---	---	
HcgAH: Haymond-----	8A	Slight	Moderate	Severe	Slight	Severe	Tuliptree-----	100	114	American sycamore, bur oak, green ash, pin oak, swamp white oak, sweetgum.
HchA: Haymond-----	8A	Slight	Slight	Slight	Slight	Severe	Tuliptree-----	100	114	Shumard's oak, black cherry, black walnut, bur oak, eastern white pine, northern red oak, tuliptree, white ash, white oak.
							Black walnut-----	70	---	
							White oak-----	80	57	
HefG, HeoG: Hickory-----	5R	Severe	Severe	Slight	Slight	Severe	Northern red oak----	85	72	Black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
							Bitternut hickory---	---	---	
							Green ash-----	---	---	
							Tuliptree-----	95	100	
							White oak-----	85	72	
							Black oak-----	---	---	
HelD2: Hickory-----	5R	Moderate	Moderate	Slight	Slight	Severe	Northern red oak----	85	72	Black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
							Bitternut hickory---	---	---	
							Green ash-----	---	---	
							Tuliptree-----	95	100	
							White oak-----	85	72	
							Black oak-----	---	---	
Stinesville-----	8A	Slight	Moderate	Slight	Slight	Severe	Tuliptree-----	105	114	Black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
							Northern red oak----	---	---	

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
HeoE, HeoE3: Hickory-----	5R	Moderate	Moderate	Slight	Slight	Severe	Northern red oak----	85	72	Black cherry, black walnut,
							Bitternut hickory---	---	---	eastern white
							Green ash-----	---	---	pine, northern
							Tuliptree-----	95	100	red oak,
							White oak-----	85	72	tuliptree,
							Black oak-----	---	---	white ash, white oak.
HepG: Hickory-----	5R	Severe	Severe	Slight	Slight	Severe	Northern red oak----	85	72	Black cherry, black walnut,
							Bitternut hickory---	---	---	eastern white
							Green ash-----	---	---	pine, green
							Tuliptree-----	95	100	ash, northern
							White oak-----	85	72	red oak,
							Black oak-----	---	---	tuliptree, white ash, white oak.
Adyeville-----	3R	Severe	Severe	Moderate	Moderate	Moderate	Northern red oak----	64	43	Black oak, chinkapin oak, eastern white
										pine, green
										ash, scarlet
										oak
HesG: Hickory-----	5R	Severe	Severe	Slight	Slight	Severe	Northern red oak----	85	72	Black cherry, black walnut,
							Bitternut hickory---	---	---	eastern white
							Green ash-----	---	---	pine, green
							Tuliptree-----	95	100	ash, northern
							White oak-----	85	72	red oak,
							Black oak-----	---	---	tuliptree, white ash, white oak.
Chetwynd-----	7R	Severe	Severe	Slight	Slight	Severe	Tuliptree-----	99	100	Black cherry, eastern white
							Northern red oak----	88	72	pine, green
										ash, northern
										red oak,
										tuliptree, white oak.
HeuE: Hickory-----	5R	Moderate	Moderate	Slight	Slight	Severe	Northern red oak----	85	72	Black cherry, black walnut,
							Bitternut hickory---	---	---	eastern white
							Green ash-----	---	---	pine, green
							Tuliptree-----	95	100	ash, northern
							White oak-----	85	72	red oak,
							Black oak-----	---	---	tuliptree, white ash, white oak.

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
HeuE: Wellston-----	4R	Moderate	Moderate	Slight	Slight	Severe	Northern red oak----	81	57	Black cherry, black walnut,
							Sugar maple-----	---	---	eastern white
							White ash-----	---	---	pine, green
							Black walnut-----	---	---	ash, northern
							Tuliptree-----	90	86	red oak,
							Virginia pine-----	70	114	tuliptree,
							Black cherry-----	---	---	white ash,
							White oak-----	---	---	white oak.
HeuF: Hickory-----	5R	Severe	Moderate	Slight	Slight	Severe	Northern red oak----	85	72	Black cherry, black walnut,
							Bitternut hickory---	---	---	eastern white
							Green ash-----	---	---	pine, green
							Tuliptree-----	95	100	ash, northern
							White oak-----	85	72	red oak,
							Black oak-----	---	---	tuliptree, white ash, white oak.
Wellston-----	4R	Severe	Moderate	Slight	Slight	Severe	Northern red oak----	81	57	Black cherry, black walnut,
							Sugar maple-----	---	---	eastern white
							White ash-----	---	---	pine, green
							Black walnut-----	---	---	ash, northern
							Tuliptree-----	90	86	red oak,
							Virginia pine-----	70	114	tuliptree,
							Black cherry-----	---	---	white ash, white oak.
							White oak-----	---	---	
HkaB: Hollybrook-----	2D	Slight	Moderate	Severe	Severe	Severe	Northern red oak----	45	29	Virginia pine, black locust, black oak, blackgum, bur oak, chinkapin oak, eastern white pine, green ash.
HleAV: Holton-----	5A	Slight	Moderate	Severe	Moderate	Severe	Pin oak-----	85	72	American
							Sugar maple-----	80	57	sycamore,
							Tuliptree-----	90	86	Shumard's oak,
							Northern red oak----	80	57	bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum, white ash.
HnoA: Hoosierville----	5W	Slight	Severe	Moderate	Severe	Severe	Pin oak-----	85	72	Baldcypress, bur oak, green
							Sweetgum-----	85	86	ash, pin oak, red maple, swamp white oak, sweetgum.
							White oak-----	70	57	

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
LnfA, LnfB: Lieber-----	4W	Slight	Moderate	Slight	Moderate	Severe	Red maple----- Tuliptree-----	80 90	57 86	American sycamore, Shumard's oak, bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum, white ash.
MecA, MecAQ, MecB: Martinsville----	4A	Slight	Slight	Slight	Slight	Severe	White oak----- Sweetgum----- Tuliptree-----	80 76 98	57 72 100	Black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
MhhAH: McAdoo-----	8W	Slight	Moderate	Severe	Slight	Severe	Sweetgum-----	92	114	American sycamore, black walnut, bur oak, green ash, swamp white oak, white ash.
MhhAK: McAdoo-----	8A	Slight	Slight	Slight	Slight	Severe	Sweetgum----- Black walnut----- Tuliptree----- Eastern cottonwood--	92 --- 107 ---	114 --- 114 ---	Shumard's oak, black cherry, black walnut, bur oak, eastern white pine, northern red oak, tuliptree, white ash, white oak.
MhuA: McGary-----	4W	Slight	Moderate	Slight	Moderate	Severe	White oak----- Sweetgum----- Tuliptree----- Pin oak-----	70 80 85 85	57 86 86 72	American sycamore, Shumard's oak, bur oak, green ash, pin oak, swamp white oak, sweetgum, white ash.

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
MrcG: Minnehaha-----	5R	Severe	Severe	Moderate	Slight	Moderate	White oak-----	92	72	Virginia pine, black locust, black oak, blackgum, bur oak, eastern white pine, northern red oak, tuliptree, white oak.
MsvA: Montgomery-----	5W	Slight	Severe	Severe	Severe	Severe	Pin oak-----	88	72	Baldcypress,
							Sweetgum-----	90	100	bur oak, green
							White oak-----	75	57	ash, pin oak, red maple, swamp white oak, sweetgum.
MvrAH: Moundhaven-----	4S	Slight	Moderate	Severe	Severe	Moderate	Northern red oak----	78	57	American
							Tuliptree-----	---	---	sycamore, black
							White oak-----	---	---	oak, green ash, northern red oak, red maple, white ash.
NbhAH: Newark-----	5W	Slight	Moderate	Severe	Moderate	Severe	Pin oak-----	96	72	American
							Green ash-----	---	---	sycamore, bur
							Sweetgum-----	85	86	oak, green ash,
							Eastern cottonwood--	89	100	pin oak, red
							Overcup oak-----	---	---	maple, swamp
							Cherrybark oak-----	---	---	white oak,
							Shumard's oak-----	---	---	sweetgum.
OfaAV: Oldenburg-----	5A	Slight	Moderate	Severe	Slight	Severe	Northern red oak----	90	72	American
							Tuliptree-----	94	100	sycamore, Shumard's oak, bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum, white ash.
OfcAV: Oldenburg-----	5A	Slight	Moderate	Severe	Slight	Moderate	Northern red oak----	85	72	American
										sycamore, Shumard's oak, bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum, white ash.

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
OfeB: Olephant-----	5A	Slight	Slight	Slight	Slight	Severe	White oak----- Tuliptree-----	85 105	72 114	Black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
OmK2, OmK3: Otwell-----	3D	Slight	Slight	Moderate	Moderate	Severe	White oak----- Sugar maple----- Tuliptree-----	65 --- ---	43 --- ---	Virginia pine, black locust, black oak, eastern white pine, northern red oak, tuliptree, white ash, white oak.
OmK3: Otwell-----	3R	Moderate	Moderate	Moderate	Severe	Moderate	White oak----- Sugar maple----- Tuliptree-----	65 --- ---	43 --- ---	Black oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
PbbC2, PbbC3: Parke-----	5A	Slight	Slight	Slight	Slight	Severe	White oak----- Sweetgum----- Tuliptree-----	90 76 98	72 72 100	Black cherry, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak.
PbbD2, PbbD3: Parke-----	5R	Moderate	Moderate	Slight	Slight	Severe	White oak----- Sweetgum----- Tuliptree-----	90 76 98	72 72 100	Black cherry, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak.
PcnA: Patrickburg----	4D	Slight	Moderate	Slight	Moderate	Severe	White oak----- Tuliptree----- Pin oak----- Northern red oak----	82 --- --- ---	57 --- --- ---	American sycamore, Shumard's oak, bur oak, green ash, pin oak, swamp white oak, sweetgum, white ash.

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
PcrAQ, PcrB2, PcrC2: Pekin-----	4D	Slight	Slight	Slight	Moderate	Severe	White oak----- Sugar maple----- Tuliptree----- Virginia pine-----	70 75 85 75	57 43 86 114	Black oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
PhaA: Peoga-----	6W	Slight	Severe	Moderate	Severe	Severe	Pin oak----- Red maple----- American beech----- Sweetgum----- Tuliptree----- Swamp white oak----	100 --- --- 90 75 ---	86 --- --- 100 57 ---	American sycamore, bur oak, eastern cottonwood, green ash, pin oak, red maple, swamp white oak, sweetgum.
PhaAP: Peoga-----	4W	Slight	Severe	Severe	Severe	Severe	Pin oak-----	80	57	American sycamore, bur oak, eastern cottonwood, green ash, pin oak, red maple, swamp white oak, sweetgum.
PlcAV: Piankeshaw-----	7A	Slight	Moderate	Severe	Slight	Moderate	Tuliptree----- Eastern cottonwood-- Black oak-----	95 --- ---	100 143 ---	American sycamore, black oak, green ash, northern red oak, red maple, white ash.
PlfA, PlfB2: Pike-----	5A	Slight	Slight	Slight	Slight	Severe	White oak----- Sweetgum----- Tuliptree-----	90 76 98	72 72 100	Black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
PrwAV: Pope-----	7A	Slight	Moderate	Severe	Slight	Severe	Tuliptree----- Bitternut hickory--- American beech----- Blackgum----- American sycamore--- White oak----- Northern red oak---- American basswood--- Eastern hemlock----	96 --- --- --- --- 80 --- --- ---	100 --- --- --- --- 57 --- --- ---	American sycamore, green ash, pin oak, red maple, swamp white oak, white ash.

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Plant competition	Common trees	Site index	Volume of wood fiber*	
PryB: Potawatomi-----	4D	Slight	Moderate	Slight	Moderate	Severe	White oak----- Tuliptree-----	80 93	57 100	Virginia pine, black locust, black oak, eastern white pine, northern red oak, tuliptree, white ash, white oak.
PsaD3, PsbF: Pottersville----	4A	Moderate	Moderate	Slight	Slight	Severe	White oak----- Northern red oak----	75 78	57 57	Black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
PsaG: Pottersville----	4R	Severe	Severe	Slight	Slight	Severe	White oak----- Northern red oak----	75 78	57 57	Black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
RpzG: Romona-----	4R	Severe	Severe	Moderate	Slight	Moderate	Northern red oak----	73	57	Chinkapin oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
Corydon-----	4R	Severe	Severe	Severe	Severe	Slight	Northern red oak---- Tuliptree----- White oak-----	70 85 70	57 86 57	Virginia pine, black oak, eastern white pine, green ash, northern red oak, tuliptree.
Rock outcrop.										

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
RtcC3: Ryker-----	5A	Slight	Slight	Slight	Slight	Severe	White oak----- Sweetgum----- Tuliptree-----	90 76 98	72 72 100	Black cherry, black oak, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
SfoA: Shakamak-----	4D	Slight	Slight	Slight	Moderate	Severe	White oak----- Sugar maple----- Tuliptree-----	75 70 90	57 43 86	Black oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
SfyB2, SfyC2: Shircliff-----	8C	Slight	Slight	Slight	Slight	Severe	Tuliptree----- Red pine-----	105 84	114 172	Shumard's oak, black locust, black oak, bur oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
SneC2, SneC3: Solsberry-----	4D	Slight	Slight	Slight	Moderate	Severe	Northern red oak--- Tuliptree----- Black oak-----	80 --- ---	57 --- ---	Black oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
SneD2, SneD3, SneD5: Solsberry-----	4D	Moderate	Moderate	Slight	Moderate	Moderate	Northern red oak--- Tuliptree----- Black oak-----	80 --- ---	57 --- ---	Black oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
StaAV: Steff-----	8W	Slight	Moderate	Severe	Slight	Severe	Tuliptree----- Red maple----- Silver maple----- River birch----- White ash----- Sweetgum----- Blackgum----- American sycamore--- White oak----- Black oak-----	107 --- --- --- --- 100 --- --- --- 88	114 --- --- --- --- 143 --- --- --- 72	American sycamore, bur oak, green ash, pin oak, swamp white oak, sweetgum.
StdAH: Stendal-----	5W	Slight	Moderate	Severe	Moderate	Severe	Pin oak----- Sweetgum----- Tuliptree----- Virginia pine----- Cottonwood-----	90 85 90 90 88	72 86 86 129 100	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, overcup oak, pin oak, red maple, swamp white oak, sweetgum.
StfB2, StfC2: Stinesville----	8A	Slight	Slight	Slight	Slight	Severe	Tuliptree----- Northern red oak----	105 ---	114 ---	Black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
StgC2: Stinesville----	8A	Slight	Slight	Slight	Slight	Severe	Tuliptree----- Northern red oak----	105 ---	114 ---	Black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
Ryker-----	5A	Slight	Slight	Slight	Slight	Severe	White oak----- Sweetgum----- Tuliptree-----	90 76 98	72 72 100	Black cherry, black oak, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
Grayford-----	5A	Slight	Slight	Slight	Slight	Moderate	White oak-----	90	72	Black cherry, eastern white pine, green ash, northern red oak, tuliptree, white oak.
							Sweetgum-----	76	72	
							Tuliptree-----	98	100	
StgD2: Stinesville-----	8A	Slight	Moderate	Slight	Slight	Severe	Tuliptree-----	105	114	Black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
							Northern red oak----	---	---	
Ryker-----	5A	Moderate	Moderate	Slight	Slight	Severe	White oak-----	90	72	Black cherry, black oak, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
							Sweetgum-----	76	72	
							Tuliptree-----	98	100	
StgD2: Grayford-----	5R	Moderate	Moderate	Slight	Slight	Moderate	White oak-----	90	72	Black cherry, eastern white pine, green ash, northern red oak, tuliptree, white oak.
							Sweetgum-----	76	72	
							Tuliptree-----	98	100	
SupAH: Stonelick-----	4A	Slight	Moderate	Severe	Slight	Moderate	Northern red oak----	80	57	American sycamore, Shumard's oak, bur oak, green ash, swamp white oak, sweetgum, white ash.
							Sugar maple-----	---	---	
							White ash-----	---	---	
							Black walnut-----	---	---	
							Tuliptree-----	95	100	
							Black cherry-----	---	---	
SwhG: Stubenville-----	8R	Severe	Severe	Slight	Slight	Severe	Tuliptree-----	95	100	Black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
							Northern red oak----	85	72	

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
SwhG: Hickory-----	5R	Severe	Severe	Slight	Slight	Severe	Northern red oak--- Bitternut hickory--- Green ash----- Tuliptree----- White oak----- Black oak-----	85 --- --- 95 85 ---	72 --- --- 100 72 ---	Black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
TadA: Taggart-----	4A	Slight	Moderate	Slight	Moderate	Severe	Northern red oak--- White oak----- Pin oak----- Sweetgum----- Tuliptree-----	85 85 --- --- 95	72 72 --- --- 100	American sycamore, Shumard's oak, bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum, white ash.
TahB: Tapawingo-----	2D	Slight	Slight	Severe	Severe	Severe	Northern red oak---	45	29	Virginia pine, black locust, black oak, blackgum, bur oak, chinkapin oak, eastern white pine, green ash.
TahB: Nawakwa-----	2D	Slight	Slight	Severe	Severe	Severe	Northern red oak---	45	29	Virginia pine, black locust, black oak, blackgum, bur oak, chinkapin oak, eastern white pine, green ash.
TcgG: Tipsaw-----	4R	Severe	Severe	Severe	Slight	Moderate	Northern red oak--- Virginia pine----- Black oak-----	70 70 70	57 114 57	Black oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
Rock outcrop.										

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
TtaG:										
Tulip-----	4R	Severe	Severe	Slight	Slight	Moderate	Northern red oak----	80	57	Black oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
							Tuliptree-----	95	100	
Tipsaw-----	4R	Severe	Severe	Severe	Slight	Moderate	Virginia pine-----	70	114	Black oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
							Black oak-----	70	57	
							Northern red oak----	70	57	
TtcE:										
Tulip-----	4R	Moderate	Moderate	Slight	Slight	Moderate	Northern red oak----	80	57	Black oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
							Tuliptree-----	95	100	
Wellston-----	4R	Moderate	Moderate	Slight	Slight	Severe	Northern red oak----	81	57	Black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
							Sugar maple-----	---	---	
							White ash-----	---	---	
							Black walnut-----	---	---	
							Tuliptree-----	90	86	
							Virginia pine-----	70	114	
							Black cherry-----	---	---	
							White oak-----	---	---	
TtcE:										
Adyeville-----	3R	Moderate	Moderate	Moderate	Moderate	Moderate	Northern red oak----	64	43	Black oak, chinkapin oak, eastern white pine, green ash, scarlet oak.
VdgA:										
Vigo-----	5W	Slight	Moderate	Slight	Moderate	Severe	Pin oak-----	90	86	American sycamore, Shumard's oak, bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum, white ash.
							Sweetgum-----	90	86	
							American sycamore---	---	---	
							Eastern cottonwood--	---	---	
							White oak-----	---	---	
							Northern red oak----	---	---	

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
WeaA, WeaAQ: Wea-----	4A	Slight	Slight	Slight	Slight	Moderate	---	---	---	Shumard's oak, black walnut, bur oak, eastern white pine, green ash, northern red oak, tuliptree, white oak.
Elston-----	4A	Slight	Slight	Slight	Slight	Moderate	---	---	---	Shumard's oak, black walnut, bur oak, eastern white pine, green ash, northern red oak, tuliptree, white oak.
WhfD2: Wellston-----	4R	Moderate	Moderate	Slight	Slight	Severe	Northern red oak---- Sugar maple----- White ash----- Black walnut----- Tuliptree----- Virginia pine----- Black cherry----- White oak-----	81 --- --- --- 90 70 --- ---	57 --- --- --- 86 114 --- ---	Black cherry, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak.
WlmAK: Whitaker-----	3A	Slight	Moderate	Slight	Moderate	Severe	White oak----- Sweetgum----- Tuliptree----- Pin oak----- Northern red oak----	65 --- --- --- ---	43 --- --- --- ---	American sycamore, bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum, tuliptree, white ash.
WokAH: Willbur-----	8A	Slight	Moderate	Severe	Slight	Severe	Tuliptree-----	100	114	American sycamore, bur oak, green ash, pin oak, swamp white oak, sweetgum.
WolAI, WomAH: Willhite-----	5W	Slight	Severe	Severe	Severe	Severe	Pin oak----- Sweetgum-----	86 90	72 100	American sycamore, bur oak, eastern cottonwood, green ash, pin oak, red maple, swamp white oak, sweetgum.

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordination symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Plant competition	Common trees	Site index	Volume of wood fiber*	
WprAQ, WpuAK: Wirt-----	8A	Slight	Slight	Slight	Slight	Severe	Tuliptree-----	105	114	Shumard's oak, black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
WpuAV: Wirt-----	8A	Slight	Moderate	Severe	Slight	Severe	Tuliptree-----	105	114	Shumard's oak, black walnut, eastern white pine, green ash, northern red oak, swamp chestnut oak, tuliptree, white ash, white oak.
ZamB2, ZamC2, ZamC3: Zanesville-----	4D	Slight	Slight	Slight	Moderate	Moderate	White oak----- Hickory----- Tuliptree----- Black oak-----	69 --- 90 75	57 --- 86 57	Virginia pine, black locust, black oak, eastern white pine, northern red oak, tuliptree, white ash, white oak.
ZamD2, ZamD5: Zanesville-----	4D	Moderate	Moderate	Slight	Moderate	Moderate	White oak----- Hickory----- Tuliptree----- Black oak-----	69 --- 90 75	57 --- 86 57	Black oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.
ZapD3: Zanesville-----	4D	Moderate	Moderate	Slight	Moderate	Moderate	White oak----- Hickory----- Tuliptree----- Black oak-----	69 --- 90 75	57 --- 86 57	Black oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak.

See footnote at end of table.

Table 10.--Forestland Management and Productivity--Continued

Map symbol and soil name	Ordi- nation symbol	Management concerns					Potential productivity			Suggested trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Plant competi- tion	Common trees	Site index	Volume of wood fiber*	
ZapD3: Tulip-----	4R	Moderate	Moderate	Slight	Slight	Moderate	Northern red oak---	80	57	Black oak,
							Tuliptree-----	95	100	eastern white
										pine, green
										ash, northern
										red oak,
										tuliptree,
										white ash,
										white oak.

* Volume of wood fiber is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

Table 11.--Recreation

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation. Absence of an entry indicates that no rating is applicable. See text for definitions of terms used in this table.)

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AbgAU:					
Adrian-----	Severe: excess humus, ponding.	Severe: excess humus, ponding.	Severe: excess humus, ponding.	Severe: excess humus, ponding.	Severe: excess humus, ponding.
AfeC:					
Alvin-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
Bloomfield-----	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
AfeD:					
Alvin-----	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Bloomfield-----	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too sandy.	Severe: slope.
AffE:					
Alvin-----	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Bloomfield-----	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too sandy.	Severe: slope.
Princeton-----	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
AfsB:					
Alvin-----	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
Princeton-----	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
AfsC:					
Alvin-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
Princeton-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
AftD:					
Alvin-----	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Princeton-----	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
AhrAK:					
Armiesburg-----	Severe: flooding.	Slight-----	Moderate: flooding.	Slight-----	Moderate: flooding.

Table 11.--Recreation--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AkeB2:					
Arney-----	Moderate: percs slowly, wetness.	Moderate: percs slowly, wetness.	Moderate: percs slowly, slope, wetness.	Moderate: wetness.	Moderate: wetness.
AloB2:					
Ava-----	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: wetness.
AmkA:					
Ayrshire-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
BdxAV:					
Belknap-----	Severe: flooding, wetness.	Severe: wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: flooding, wetness.
BgeAH:					
Birds-----	Severe: flooding, ponding.	Severe: ponding.	Severe: flooding, ponding.	Severe: ponding.	Severe: flooding, ponding.
BodAV:					
Bonnie-----	Severe: flooding, ponding.	Severe: ponding.	Severe: flooding, ponding.	Severe: ponding.	Severe: flooding, ponding.
CkkB2:					
Cincinnati-----	Moderate: percs slowly, wetness.	Moderate: percs slowly, wetness.	Moderate: percs slowly, slope, wetness.	Moderate: wetness.	Slight.
CkkC2:					
Cincinnati-----	Moderate: percs slowly, slope, wetness.	Moderate: percs slowly, slope, wetness.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
CkkC3:					
Cincinnati-----	Moderate: percs slowly, slope, wetness.	Moderate: percs slowly, slope, wetness.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
CkkD2:					
Cincinnati-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
CkkD3:					
Cincinnati-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
CspC2:					
Crider-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
CspC3:					
Crider-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.

Table 11.--Recreation--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
DfnA:					
Dubois-----	Severe: percs slowly, wetness.	Severe: percs slowly, wetness.	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.
EadD2:					
Ebal-----	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: erodes easily.	Severe: slope.
GaaE2:					
Gallimore-----	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
GabG:					
Gallimore-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Chetwynd-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
GblAH:					
Gessie-----	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
GmcD3:					
Grayford-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
GmcE2:					
Grayford-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
GmhD2:					
Grayford-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Ryker-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
GmpE2:					
Greybrook-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
GmpF:					
Greybrook-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
HarD2:					
Haggatt-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
HarD3:					
Haggatt-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
HasE2:					
Haggatt-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Caneyville-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.

Table 11.--Recreation--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
HccA:					
Haubstadt-----	Moderate: wetness, percs slowly.	Moderate: percs slowly, wetness.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
HccB2:					
Haubstadt-----	Moderate: wetness, percs slowly.	Moderate: percs slowly, wetness.	Moderate: wetness, percs slowly, slope.	Moderate: wetness.	Moderate: wetness.
HccC3:					
Haubstadt-----	Severe: wetness.	Moderate: percs slowly, slope, wetness.	Severe: slope, wetness.	Severe: erodes easily.	Moderate: slope, wetness.
HcgAH:					
Haymond-----	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
HchA:					
Haymond-----	Severe: flooding.	Slight-----	Moderate: flooding.	Slight-----	Moderate: flooding.
HefG:					
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily, slope.	Severe: slope.
HelD2:					
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Stinesville----	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
HeoE:					
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
HeoE3:					
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
HeoG:					
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily, slope.	Severe: slope.
HepG:					
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily, slope.	Severe: slope.
Adyeville-----	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, erodes easily.	Severe: slope.
HesG:					
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily, slope.	Severe: slope.

Table 11.--Recreation--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
HesG: Chetwynd-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
HeuE: Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Wellston-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
HeuF: Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily, slope.	Severe: slope.
Wellston-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily, slope.	Severe: slope.
HkaB: Hollybrook-----	Severe: percs slowly, wetness.	Severe: percs slowly, wetness.	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.
HleAV: Holton-----	Severe: flooding, wetness.	Severe: wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: flooding, wetness.
HnoA: Hoosierville----	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
LnfA: Lieber-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
LnfB: Lieber-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
MecA: Martinsville----	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
MecAQ: Martinsville----	Severe: flooding.	Slight-----	Slight-----	Slight-----	Slight.
MecB: Martinsville----	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
MhhAH: McAdoo-----	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
MhhAK: McAdoo-----	Severe: flooding.	Slight-----	Moderate: flooding.	Slight-----	Moderate: flooding.
MhuA: McGary-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

Table 11.--Recreation--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
MrcG:					
Minnehaha-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
MsvA:					
Montgomery-----	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
MvrAH:					
Moundhaven-----	Severe: flooding.	Moderate: flooding, too sandy.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
NbhAH:					
Newark-----	Severe: flooding, wetness.	Severe: wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: flooding, wetness.
OfaAV:					
Oldenburg-----	Severe: flooding.	Moderate: wetness, flooding.	Moderate: flooding, wetness.	Slight-----	Severe: flooding.
OfcAV:					
Oldenburg-----	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: flooding.
OfeB:					
Olephant-----	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly, slope.	Slight-----	Slight.
OmkC2:					
Otwell-----	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly, slope.	Severe: erodes easily.	Moderate: slope.
OmkC3:					
Otwell-----	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly, slope.	Severe: erodes easily.	Moderate: slope.
OmkD3:					
Otwell-----	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: erodes easily.	Severe: slope.
PbbC2:					
Parke-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
PbbC3:					
Parke-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
PbbD2:					
Parke-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
PbbD3:					
Parke-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.

Table 11.--Recreation--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
PcnA: Patrickburg----	Severe: percs slowly, wetness.	Severe: percs slowly, wetness.	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.
PcrAQ: Pekin-----	Severe: flooding, percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: wetness.
PcrB2: Pekin-----	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: wetness.
PcrC2: Pekin-----	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly, slope.	Severe: erodes easily.	Moderate: slope, wetness.
PhaA: Peoga-----	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
PhaAP: Peoga-----	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
PlcAV: Piankeshaw----	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
PlfA: Pike-----	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
PlfB2: Pike-----	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
Pml: Pits, quarry.					
PrwAV: Pope-----	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
PryB: Potawatomi-----	Severe: wetness.	Moderate: percs slowly, wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
PsaD3: Pottersville----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
PsaG: Pottersville----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily, slope.	Severe: slope.
PsbF: Pottersville----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily, slope.	Severe: slope.

Table 11.--Recreation--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Rnn: Riverwash.					
RpzG: Romona-----	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.	Severe: large stones, slope.
Corydon-----	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, large stones, slope.	Severe: slope.	Severe: depth to rock, large stones, slope.
Rock outcrop.					
RtcC3: Ryker-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
SfoA: Shakamak-----	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: wetness.
SfyB2: Shircliff-----	Moderate: percs slowly, wetness.	Moderate: percs slowly, wetness.	Moderate: percs slowly, slope, wetness.	Moderate: wetness.	Moderate: wetness.
SfyC2: Shircliff-----	Moderate: percs slowly, slope, wetness.	Moderate: percs slowly, slope, wetness.	Severe: slope.	Severe: erodes easily.	Moderate: slope, wetness.
SneC2: Solsberry-----	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly, slope.	Severe: erodes easily.	Moderate: slope, wetness.
SneC3: Solsberry-----	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly, slope.	Severe: erodes easily.	Moderate: slope, wetness.
SneD2: Solsberry-----	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: erodes easily.	Severe: slope.
SneD3: Solsberry-----	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: erodes easily.	Severe: slope.
SneD5: Solsberry-----	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: erodes easily.	Severe: slope.
StaAV: Steff-----	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Severe: flooding.

Table 11.--Recreation--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
StdAH: Stendal-----	Severe: flooding, wetness.	Severe: wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: flooding, wetness.
StfB2: Stinesville----	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
StfC2: Stinesville----	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
StgC2: Stinesville----	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
Ryker-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Grayford-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
StgD2: Stinesville----	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Ryker-----	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Grayford-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
SupAH: Stonelick-----	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
SwhG: Stubenville----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily, slope.	Severe: slope.
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily, slope.	Severe: slope.
TadA: Taggart-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
TahB: Tapawingo-----	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Slight-----	Moderate: droughty.
Nawakwa-----	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Slight-----	Moderate: droughty.
TcgG: Tipsaw-----	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: percs slowly, slope, small stones.	Severe: slope, erodes easily.	Severe: slope.
Rock outcrop.					

Table 11.--Recreation--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
TtaG:					
Tulip-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Tipsaw-----	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: percs slowly, slope, small stones.	Severe: slope, erodes easily.	Severe: slope.
TtcE:					
Tulip-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
Wellston-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Adyeville-----	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.	Severe: slope.
Uaa:					
Udorthents.					
VdgA:					
Vigo-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
W:					
Water.					
WeaA:					
Wea-----	Slight-----	Slight-----	Moderate: small stones.	Slight-----	Moderate: droughty.
Elston-----	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
WeaAQ:					
Wea-----	Severe: flooding.	Slight-----	Moderate: small stones.	Slight-----	Moderate: droughty.
Elston-----	Severe: flooding.	Slight-----	Slight-----	Slight-----	Slight.
WhfD2:					
Wellston-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
WlmAK:					
Whitaker-----	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
WokAH:					
Wilbur-----	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.
WolAI:					
Wilhite-----	Severe: flooding, too clayey, ponding.	Severe: percs slowly, ponding, too clayey.	Severe: flooding, ponding, too clayey.	Severe: ponding, too clayey.	Severe: flooding, ponding, too clayey.

Table 11.--Recreation--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
WomAH:					
Wilhite-----	Severe: flooding, percs slowly, ponding.	Severe: percs slowly, ponding.	Severe: flooding, ponding.	Severe: ponding.	Severe: flooding, ponding.
WprAQ:					
Wirt-----	Severe: flooding.	Slight-----	Slight-----	Slight-----	Slight.
WpuAK:					
Wirt-----	Severe: flooding.	Slight-----	Moderate: flooding.	Slight-----	Moderate: flooding.
WpuAV:					
Wirt-----	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
WpyBJ:					
Wirt-----	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Pekin-----	Severe: flooding, percs slowly.	Severe: flooding, percs slowly.	Severe: flooding, percs slowly.	Severe: flooding.	Severe: flooding.
ZamB2:					
Zanesville-----	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Slight.
ZamC2:					
Zanesville-----	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly, slope.	Severe: erodes easily.	Moderate: slope.
ZamC3:					
Zanesville-----	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly, slope.	Severe: erodes easily.	Moderate: slope.
ZamD2:					
Zanesville-----	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: erodes easily.	Severe: slope.
ZamD5:					
Zanesville-----	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: erodes easily.	Severe: slope.
ZapD3:					
Zanesville-----	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: percs slowly, slope.	Severe: erodes easily.	Severe: slope.
Tulip-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.

Table 12.--Wildlife Habitat

(See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wildlife
AbgAU:										
Adrian-----	Very poor.	Poor	Poor	Very poor.	Very poor.	Good	Good	Poor	Very poor.	Good.
AfeC:										
Alvin-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Bloomfield-----	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
AfeD:										
Alvin-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Bloomfield-----	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
AffE:										
Alvin-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Bloomfield-----	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Princeton-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
AfsB:										
Alvin-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Princeton-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AfsC:										
Alvin-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Princeton-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
AftD:										
Alvin-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Princeton-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
AhrAK:										
Armiesburg-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AkeB2:										
Arney-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wildlife
AloB2:										
Ava-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AmkA:										
Ayrshire-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
BdxAV:										
Belknap-----	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
BgeAH:										
Birds-----	Poor	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
BodAV:										
Bonnie-----	Poor	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
CkkB2:										
Cincinnati-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CkkC2:										
Cincinnati-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CkkC3:										
Cincinnati-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CkkD2:										
Cincinnati-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
CkkD3:										
Cincinnati-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
CspC2:										
Crider-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CspC3:										
Crider-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
DfnA:										
Dubois-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
EaaD2:										
Ebal-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
GaaE2:										
Gallimore-----	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
GabG:										
Gallimore-----	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Chetwynd-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wildlife
GblAH:										
Gessie-----	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
GmcD3:										
Grayford-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
GmcE2:										
Grayford-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
GmhD2:										
Grayford-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Ryker-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
GmpE2:										
Greybrook-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
GmpF:										
Greybrook-----	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
HarD2:										
Haggatt-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
HarD3:										
Haggatt-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
HasE2:										
Haggatt-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Caneyville-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
HccA:										
Haubstadt-----	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
HccB2:										
Haubstadt-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HccC3:										
Haubstadt-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HcgAH:										
Haymond-----	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
HchA:										
Haymond-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wildlife
HefG:										
Hickory-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
HelD2:										
Hickory-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Stinesville----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HeoE:										
Hickory-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
HeoE3:										
Hickory-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
HeoG:										
Hickory-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
HepG:										
Hickory-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Adyeville-----	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
HesG:										
Hickory-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Chetwynd-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
HeuE:										
Hickory-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Wellston-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
HeuF:										
Hickory-----	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Wellston-----	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
HkaB:										
Hollybrook-----	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
HleAV:										
Holton-----	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
HnoA:										
Hoosierville----	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
LnfA:										
Lieber-----	Fair	Good	Poor	Good	Good	Good	Fair	Fair	Good	Fair.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wildlife
LnfB:										
Lieber-----	Fair	Good	Poor	Good	Good	Good	Poor	Fair	Good	Poor.
MecA:										
Martinsville----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MecAQ:										
Martinsville----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MecB:										
Martinsville----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MhhAH:										
McAdoo-----	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
MhhAK:										
McAdoo-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MhuA:										
McGary-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
MrcG:										
Minnehaha-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
MsvA:										
Montgomery-----	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
MvrAH:										
Moundhaven-----	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
NbhAH:										
Newark-----	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
OfaAV:										
Oldenburg-----	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
OfcAV:										
Oldenburg-----	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
OfeB:										
Olephant-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OmK2:										
Otwell-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
OmK3:										
Otwell-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
OmK3:										
Otwell-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wildlife
PbbC2:										
Parke-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
PbbC3:										
Parke-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
PbbD2:										
Parke-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
PbbD3:										
Parke-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
PcnA:										
Patrickburg---	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
PcrAQ:										
Pekin-----	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
PcrB2:										
Pekin-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PcrC2:										
Pekin-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
PhaA:										
Peoga-----	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
PhaAP:										
Peoga-----	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
PlcAV:										
Piankeshaw-----	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
PlfA:										
Pike-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PlfB2:										
Pike-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Pml:										
Pits, quarry.										
PrwAV:										
Pope-----	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
PryB:										
Potawatomi-----	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
PsaD3:										
Pottersville----	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wildlife
PsaG:										
Pottersville----	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
PsbF:										
Pottersville----	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Rnn:										
Riverwash.										
RpzG:										
Romona-----	Very poor.	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Corydon-----	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop.										
RtcC3:										
Ryker-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SfoA:										
Shakamak-----	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
SfyB2:										
Shircliff-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SfyC2:										
Shircliff-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SneC2:										
Solsberry-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SneC3:										
Solsberry-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SneD2:										
Solsberry-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
SneD3:										
Solsberry-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
SneD5:										
Solsberry-----	Very poor.	Very poor.	Poor	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
StaAV:										
Steff-----	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
StdAH:										
Stendal-----	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wildlife
StfB2:										
Stinesville-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
StfC2:										
Stinesville-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
StgC2:										
Stinesville-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ryker-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Grayford-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
StgD2:										
Stinesville-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Ryker-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Grayford-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
SupAH:										
Stonelick-----	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
SwhG:										
Stubenville-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Hickory-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
TadA:										
Taggart-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
TahB:										
Tapawingo-----	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Nawakwa-----	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
TcgG:										
Tipsaw-----	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop.										
TtaG:										
Tulip-----	Very poor.	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Tipsaw-----	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wildlife
TtcE:										
Tulip-----	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Wellston-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Adyeville-----	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Uaa:										
Udorthents.										
VdgA:										
Vigo-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
W:										
Water.										
WeaA:										
Wea-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Elston-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WeaAQ:										
Wea-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Elston-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WhfD2:										
Wellston-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
WlmAK:										
Whitaker-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
WokAH:										
Wilbur-----	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
WolAI:										
Wilhite-----	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WomAH:										
Wilhite-----	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WprAQ:										
Wirt-----	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
WpuAK:										
Wirt-----	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
WpuAV:										
Wirt-----	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wildlife
WpyBJ:										
Wirt-----	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Pekin-----	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
ZamB2:										
Zanesville-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ZamC2:										
Zanesville-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ZamC3:										
Zanesville-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ZamD2:										
Zanesville-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
ZamD5:										
Zanesville-----	Very poor.	Very poor.	Poor	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
ZapD3:										
Zanesville-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Tulip-----	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.

Table 13.--Building Site Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of terms used in this table. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation.)

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AbgAU:						
Adrian-----	Severe: cutbanks cave, excess humus, ponding.	Severe: ponding, subsidence, low strength.	Severe: ponding, subsidence.	Severe: ponding, subsidence, low strength.	Severe: frost action, ponding, subsidence.	Severe: excess humus, ponding.
AfeC:						
Alvin-----	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: frost action, slope.	Moderate: slope.
Bloomfield-----	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
AfeD:						
Alvin-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Bloomfield-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
AffE:						
Alvin-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Bloomfield-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Princeton-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
AfsB:						
Alvin-----	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Moderate: frost action.	Slight.
Princeton-----	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Moderate: frost action.	Slight.
AfsC:						
Alvin-----	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: frost action, slope.	Moderate: slope.
Princeton-----	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: frost action, slope.	Moderate: slope.
AftD:						
Alvin-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

Table 13.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AftD:						
Princeton-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
AhrAK:						
Armiesburg-----	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action, low strength.	Moderate: flooding.
AkeB2:						
Arney-----	Severe: wetness.	Moderate: shrink-swell, wetness.	Severe: wetness.	Moderate: shrink-swell, slope, wetness.	Severe: frost action, low strength.	Moderate: wetness.
AloB2:						
Ava-----	Severe: wetness.	Moderate: shrink-swell, wetness.	Severe: wetness.	Moderate: shrink-swell, slope, wetness.	Severe: frost action, low strength.	Moderate: wetness.
AmkA:						
Ayrshire-----	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action, wetness.	Severe: wetness.
BdxAV:						
Belknap-----	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action, wetness.	Severe: flooding, wetness.
BgeAH:						
Birds-----	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, low strength, ponding.	Severe: flooding, ponding.
BodAV:						
Bonnie-----	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, low strength, ponding.	Severe: flooding, ponding.
CkkB2:						
Cincinnati-----	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: slope, wetness, shrink-swell.	Severe: frost action, low strength.	Slight.
CkkC2:						
Cincinnati-----	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope.
CkkC3:						
Cincinnati-----	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope.

Table 13.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
CkkD2: Cincinnati-----	Severe: slope, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope.	Severe: frost action, slope, low strength.	Severe: slope.
CkkD3: Cincinnati-----	Severe: slope, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope.	Severe: frost action, slope, low strength.	Severe: slope.
CspC2: Crider-----	Moderate: slope, too clayey.	Moderate: slope, shrink-swell.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
CspC3: Crider-----	Moderate: slope, too clayey.	Moderate: slope, shrink-swell.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
DfnA: Dubois-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness, frost action.	Severe: wetness.
EaaD2: Ebal-----	Severe: slope, wetness.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope, wetness.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell, slope, frost action.	Severe: slope.
GaaE2: Gallimore-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
GabG: Gallimore-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Chetwynd-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
GblAH: Gessie-----	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.
GmcD3: Grayford-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.

Table 13.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
GmcE2:						
Grayford-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.
GmhD2:						
Grayford-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.
Ryker-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.
GmpE2:						
Greybrook-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
GmpF:						
Greybrook-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
HarD2:						
Haggatt-----	Severe: slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell, slope, frost action.	Severe: slope.
HarD3:						
Haggatt-----	Severe: slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell, slope, frost action.	Severe: slope.
HasE2:						
Haggatt-----	Severe: slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell, slope, frost action.	Severe: slope.
Caneyville-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
HccA:						
Haubstadt-----	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: frost action, low strength.	Moderate: wetness.
HccB2:						
Haubstadt-----	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: frost action, low strength.	Moderate: wetness.

Table 13.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
HccC3: Haubstadt-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: frost action, low strength.	Moderate: slope, wetness.
HcgAH: Haymond-----	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.
HchA: Haymond-----	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Moderate: flooding.
HefG: Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
HeldD2: Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Stinesville-----	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, slope.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope.
HeoE: Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
HeoE3: Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
HeoG: Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
HepG: Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Adyeville-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
HesG: Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Chetwynd-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

Table 13.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
HeuE:						
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Wellston-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: frost action, slope.	Severe: slope.
HeuF:						
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Wellston-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: frost action, slope.	Severe: slope.
HkaB:						
Hollybrook-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action, low strength, wetness.	Severe: wetness.
HleAV:						
Holton-----	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action, wetness.	Severe: flooding, wetness.
HnoA:						
Hoosierville----	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: frost action, low strength, ponding.	Severe: ponding.
LnFA:						
Lieber-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action, low strength, wetness.	Severe: wetness.
LnFB:						
Lieber-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action, low strength, wetness.	Severe: wetness.
MecA:						
Martinsville----	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: low strength, shrink-swell.	Slight.
MecAQ:						
Martinsville----	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, shrink-swell.	Slight.
MecB:						
Martinsville----	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: low strength, shrink-swell.	Slight.

Table 13.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MhhAH: McAdoo-----	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action, low strength.	Severe: flooding.
MhhAK: McAdoo-----	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action, low strength.	Moderate: flooding.
MhuA: McGary-----	Severe: wetness.	Severe: shrink-swell, wetness.	Severe: shrink-swell, wetness.	Severe: shrink-swell, wetness.	Severe: low strength, shrink-swell, wetness.	Severe: wetness.
MrcG: Minnehaha-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: droughty, slope.
MsvA: Montgomery-----	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: low strength, ponding, shrink-swell.	Severe: ponding.
MvrAH: Moundhaven-----	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
NbhAH: Newark-----	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, low strength, wetness.	Severe: flooding, wetness.
OfaAV: Oldenburg-----	Severe: wetness, cutbanks cave.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.
OfcAV: Oldenburg-----	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.
OfeB: Olephant-----	Moderate: wetness.	Moderate: shrink-swell.	Moderate: shrink-swell, wetness.	Moderate: shrink-swell.	Severe: frost action, low strength.	Slight.
OmkC2: Otwell-----	Severe: wetness.	Moderate: shrink-swell, slope, wetness.	Severe: wetness.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope.

Table 13.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
OmkC3: Otwell-----	Severe: wetness.	Moderate: shrink-swell, slope, wetness.	Severe: wetness.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope.
OmkD3: Otwell-----	Severe: slope, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.
PbbC2: Parke-----	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope.
PbbC3: Parke-----	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope.
PbbD2: Parke-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.
PbbD3: Parke-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.
PcnA: Patrickburg---	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action, low strength, wetness.	Severe: wetness.
PcrAQ: Pekin-----	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: frost action, low strength.	Moderate: wetness.
PcrB2: Pekin-----	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Severe: frost action, low strength.	Moderate: wetness.
PcrC2: Pekin-----	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope, wetness.
PhaA: Peoga-----	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: frost action, low strength, ponding.	Severe: ponding.

Table 13.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
PhaAP: Peoga-----	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: frost action, low strength, ponding.	Severe: ponding.
PlcAV: Piankeshaw-----	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.
PlfA: Pike-----	Slight-----	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: frost action, low strength.	Slight.
PlfB2: Pike-----	Slight-----	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: frost action, low strength.	Slight.
Pml: Pits, quarry.						
PrwAV: Pope-----	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
PryB: Potawatomi-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action, low strength.	Moderate: wetness.
PsaD3: Pottersville----	Severe: slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell, slope.	Severe: slope.
PsaG: Pottersville----	Severe: slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell, slope.	Severe: slope.
PsbF: Pottersville----	Severe: slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell, slope.	Severe: slope.
Rnn: Riverwash.						
RpzG: Romona-----	Severe: depth to rock, slope.	Severe: shrink-swell, slope.	Severe: depth to rock, shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell, slope.	Severe: large stones, slope.
Corydon-----	Severe: depth to rock, slope.	Severe: depth to rock, shrink-swell, slope.	Severe: depth to rock, shrink-swell, slope.	Severe: depth to rock, shrink-swell, slope.	Severe: depth to rock, low strength, shrink-swell.	Severe: depth to rock, large stones, slope.

Table 13.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
RpzG: Rock outcrop.						
RtcC3: Ryker-----	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, slope.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope.
SfoA: Shakamak-----	Severe: wetness.	Moderate: shrink-swell, wetness.	Severe: wetness.	Moderate: shrink-swell, wetness.	Severe: frost action, low strength.	Moderate: wetness.
SfyB2: Shircliff-----	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell, wetness.	Severe: shrink-swell.	Severe: frost action, low strength, shrink-swell.	Moderate: wetness.
SfyC2: Shircliff-----	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell, wetness.	Severe: shrink-swell, slope.	Severe: frost action, low strength, shrink-swell.	Moderate: slope, wetness.
SneC2: Solsberry-----	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope, wetness.
SneC3: Solsberry-----	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope, wetness.
SneD2: Solsberry-----	Severe: slope, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.
SneD3: Solsberry-----	Severe: slope, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.
SneD5: Solsberry-----	Severe: slope, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.
StaAV: Steff-----	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding,	Severe: flooding.
StdAH: Stendal-----	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, low strength, wetness.	Severe: flooding, wetness.

Table 13.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
StfB2: Stinesville-----	Slight-----	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: frost action, low strength.	Slight.
StfC2: Stinesville-----	Moderate: slope, too clayey.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, slope.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope.
StgC2: Stinesville-----	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: frost action, low strength.	Slight.
Ryker-----	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, slope.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope.
Grayford-----	Moderate: depth to rock, slope, too clayey.	Moderate: shrink-swell, slope.	Moderate: depth to rock, shrink-swell, slope.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope.
StgD2: Stinesville-----	Moderate: slope, too clayey.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, slope.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope.
Ryker-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.
Grayford-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.
SupAH: Stonelick-----	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
SwhG: Stubenville-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
TadA: Taggart-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action, low strength, wetness.	Severe: wetness.
TahB: Tapawingo-----	Slight-----	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: frost action, low strength.	Moderate: droughty.

Table 13.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
TahB:						
Nawakwa-----	Slight-----	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: frost action, low strength.	Moderate: droughty.
TcgG:						
Tipsaw-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
TtaG:						
Tulip-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
Tipsaw-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
TtcE:						
Tulip-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
Wellston-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: frost action, slope.	Severe: slope.
Adyeville-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
Uaa:						
Udorthents.						
VdgA:						
Vigo-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action, low strength, wetness.	Severe: wetness.
W:						
Water.						
WeaA:						
Wea-----	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Moderate: frost action.	Moderate: droughty.
Elston-----	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Moderate: frost action.	Slight.
WeaAQ:						
Wea-----	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Moderate: droughty.
Elston-----	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Slight.
WhfD2:						
Wellston-----	Moderate: slope.	Moderate: slope, shrink-swell.	Moderate: slope, depth to rock.	Severe: slope.	Severe: frost action.	Moderate: slope.

Table 13.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
WlmAK: Whitaker-----	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action, wetness.	Severe: wetness.
WokAH: Wilbur-----	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.
WolAI: Wilhite-----	Severe: ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: low strength, ponding, shrink-swell.	Severe: flooding, ponding, too clayey.
WomAH: Wilhite-----	Severe: ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: low strength, ponding, shrink-swell.	Severe: flooding, ponding.
WprAQ: Wirt-----	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Slight.
WpuAK: Wirt-----	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Moderate: flooding.
WpuAV: Wirt-----	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.
WpyBJ: Wirt-----	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.
Pekin-----	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action, low strength.	Severe: flooding.
ZamB2: Zanesville-----	Severe: wetness.	Moderate: shrink-swell, wetness.	Severe: wetness.	Moderate: shrink-swell, slope, wetness.	Severe: frost action, low strength.	Slight.
ZamC2: Zanesville-----	Severe: wetness.	Moderate: shrink-swell, slope, wetness.	Severe: wetness.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope.

Table 13.--Building Site Development--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
ZamC3: Zanesville-----	Severe: wetness.	Moderate: shrink-swell, slope, wetness.	Severe: wetness.	Severe: slope.	Severe: frost action, low strength.	Moderate: slope.
ZamD2: Zanesville-----	Severe: slope, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.
ZamD5: Zanesville-----	Severe: slope, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.
ZapD3: Zanesville-----	Severe: slope, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope.	Severe: frost action, low strength, slope.	Severe: slope.
Tulip-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.

Table 14.--Sanitary Facilities

(See text for definitions of terms used in this table. Absence of an entry indicates that the soil was not rated. The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation.)

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AbgAU:					
Adrian-----	Severe: ponding, subsides.	Severe: excess humus, ponding, seepage.	Severe: ponding, seepage, too sandy.	Severe: ponding, seepage.	Poor: ponding, seepage, too sandy.
AfeC:					
Alvin-----	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage.
Bloomfield-----	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
AfeD:					
Alvin-----	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, slope.
Bloomfield-----	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, slope, too sandy.
AffE:					
Alvin-----	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, slope.
Bloomfield-----	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, slope, too sandy.
Princeton-----	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: slope.
AfsB:					
Alvin-----	Slight-----	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage.
Princeton-----	Slight-----	Severe: seepage.	Severe: seepage.	Slight-----	Fair: thin layer.
AfsC:					
Alvin-----	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage.
Princeton-----	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Moderate: slope.	Fair: slope, thin layer.

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AftD:					
Alvin-----	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, slope.
Princeton-----	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: slope.
AhrAK:					
Armiesburg-----	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Fair: too clayey.
AkeB2:					
Arney-----	Severe: percs slowly, wetness.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
AloB2:					
Ava-----	Severe: percs slowly, wetness.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
AmkA:					
Ayrshire-----	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.
BdxAV:					
Belknap-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
BgeAH:					
Birds-----	Severe: flooding, percs slowly, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
BodAV:					
Bonnie-----	Severe: flooding, percs slowly, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
CkkB2:					
Cincinnati-----	Severe: percs slowly, wetness.	Moderate: slope, seepage.	Moderate: too clayey, wetness.	Moderate: wetness.	Fair: too clayey, wetness.
CkkC2:					
Cincinnati-----	Severe: percs slowly, wetness.	Severe: slope.	Moderate: slope, too clayey, wetness.	Moderate: slope, wetness.	Fair: slope, too clayey, wetness.
CkkC3:					
Cincinnati-----	Severe: percs slowly, wetness.	Severe: slope.	Moderate: slope, too clayey, wetness.	Moderate: slope, wetness.	Fair: slope, too clayey, wetness.

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CkkD2: Cincinnati-----	Severe: percs slowly, slope, wetness.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
CkkD3: Cincinnati-----	Severe: percs slowly, slope, wetness.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
CspC2: Crider-----	Moderate: slope.	Severe: slope.	Severe: depth to rock.	Moderate: slope.	Fair: slope, too clayey.
CspC3: Crider-----	Moderate: slope.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: slope.	Fair: slope, too clayey.
DfnA: Dubois-----	Severe: percs slowly, wetness.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
EaaD2: Ebal-----	Severe: percs slowly, slope, wetness.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: hard to pack, slope, too clayey.
GaaE2: Gallimore-----	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
GabG: Gallimore-----	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Chetwynd-----	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: slope.
GblAH: Gessie-----	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Fair: thin layer.
GmcD3: Grayford-----	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope.
GmcE2: Grayford-----	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope.

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
GmhD2:					
Grayford-----	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope.
Ryker-----	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope.
GmpE2:					
Greybrook-----	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
GmpF:					
Greybrook-----	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
HarD2:					
Haggatt-----	Severe: slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: hard to pack, slope, too clayey.
HarD3:					
Haggatt-----	Severe: slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: hard to pack, slope, too clayey.
HasE2:					
Haggatt-----	Severe: slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: hard to pack, slope, too clayey.
Caneyville-----	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, hard to pack, too clayey.
HccA:					
Haubstadt-----	Severe: percs slowly, wetness.	Moderate: seepage.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
HccB2:					
Haubstadt-----	Severe: percs slowly, wetness.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
HccC3:					
Haubstadt-----	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
HcgAH:					
Haymond-----	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Good.

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
HchA:					
Haymond-----	Severe: poor filter, flooding.	Severe: seepage, flooding.	Severe: seepage, flooding.	Severe: seepage, flooding.	Poor: seepage.
HefG:					
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Held2:					
Hickory-----	Severe: slope, poor filter.	Severe: slope, seepage.	Severe: slope, seepage.	Severe: slope, seepage.	Poor: slope.
Stinesville-----	Severe: poor filter.	Severe: slope, seepage.	Severe: slope, too clayey, seepage.	Severe: seepage.	Fair: slope, too clayey.
HeoE:					
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
HeoE3:					
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
HeoG:					
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
HepG:					
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Adyeville-----	Severe: depth to rock, slope, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope, small stones.
HesG:					
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Chetwynd-----	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: slope.
HeuE:					
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Wellston-----	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope.
HeuF:					
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Wellston-----	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope.

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
HkaB:					
Hollybrook-----	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
HleAV:					
Holton-----	Severe: flooding, wetness.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness.	Poor: wetness.
HnoA:					
Hoosiersville----	Severe: percs slowly, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
LnfA:					
Lieber-----	Severe: percs slowly, wetness.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
LnfB:					
Lieber-----	Severe: percs slowly, wetness.	Moderate: seepage, slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
MecA:					
Martinsville----	Slight-----	Moderate: seepage.	Moderate: too clayey.	Slight-----	Fair: thin layer, too clayey.
MecAQ:					
Martinsville----	Moderate: flooding.	Moderate: seepage.	Moderate: flooding, too clayey.	Moderate: flooding.	Fair: thin layer, too clayey.
MecB:					
Martinsville----	Slight-----	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: thin layer, too clayey.
MhhAH:					
McAdoo-----	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Fair: too clayey.
MhhAK:					
McAdoo-----	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Fair: too clayey.
MhuA:					
McGary-----	Severe: percs slowly, wetness.	Slight-----	Severe: too clayey, wetness.	Severe: wetness.	Poor: hard to pack, too clayey, wetness.
MrcG:					
Minnehaha-----	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
MsvA: Montgomery-----	Severe: percs slowly, ponding.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: hard to pack, ponding, too clayey.
MvrAH: Moundhaven-----	Severe: flooding, poor filter.	Severe: flooding, seepage.	Severe: flooding, seepage, too sandy.	Severe: flooding, seepage.	Poor: seepage, too sandy.
NbhAH: Newark-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
OfaAV: Oldenburg-----	Severe: flooding, wetness.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness, seepage.	Fair: wetness.
OfcAV: Oldenburg-----	Severe: flooding, poor filter, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: thin layer.
OfeB: Olephant-----	Severe: percs slowly, wetness.	Moderate: seepage, slope.	Moderate: too clayey, wetness.	Slight-----	Fair: too clayey.
OmkC2: Otwell-----	Severe: percs slowly, wetness.	Severe: slope.	Moderate: slope, too clayey, wetness.	Moderate: slope, wetness.	Fair: slope, too clayey, wetness.
OmkC3: Otwell-----	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness.	Moderate: slope, wetness.	Fair: slope, too clayey, wetness.
OmkD3: Otwell-----	Severe: percs slowly, slope, wetness.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
PbbC2: Parke-----	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
PbbC3: Parke-----	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
PbbD2: Parke-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PbbD3:					
Parke-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
PcnA:					
Patricksburg----	Severe: percs slowly, wetness.	Moderate: seepage.	Severe: depth to rock, wetness.	Severe: wetness.	Poor: wetness.
PcrAQ:					
Pekin-----	Severe: percs slowly, wetness.	Moderate: seepage.	Severe: wetness.	Moderate: flooding, wetness.	Fair: wetness, too clayey.
PcrB2:					
Pekin-----	Severe: percs slowly, wetness.	Moderate: slope, seepage.	Severe: wetness.	Moderate: wetness.	Fair: wetness, too clayey.
PcrC2:					
Pekin-----	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness.	Moderate: slope, wetness.	Fair: too clayey, wetness, slope.
PhaA:					
Peoga-----	Severe: percs slowly, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
PhaAP:					
Peoga-----	Severe: percs slowly, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
PlcAV:					
Piankeshaw-----	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Poor: small stones.
PlfA:					
Pike-----	Slight-----	Moderate: seepage.	Moderate: too clayey.	Slight-----	Fair: too clayey.
PlfB2:					
Pike-----	Slight-----	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey.
Pml:					
Pits, quarry.					
PrwAV:					
Pope-----	Severe: flooding.	Severe: flooding, seepage.	Severe: flooding, seepage.	Severe: flooding, seepage.	Poor: thin layer.
PryB:					
Potawatomi-----	Severe: percs slowly, wetness.	Moderate: seepage, slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PsaD3: Pottersville----	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: hard to pack, slope, too clayey.
PsaG: Pottersville----	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: hard to pack, slope, too clayey.
PsbF: Pottersville----	Severe: percs slowly, slope.	Severe: slope, seepage.	Severe: slope, too clayey, seepage.	Severe: seepage, slope.	Poor: hard to pack, slope, too clayey.
Rnn: Riverwash.					
RpzG: Romona-----	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, large stones, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, hard to pack, too clayey.
Corydon-----	Severe: depth to rock, slope.	Severe: depth to rock, large stones, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, hard to pack, too clayey.
Rock outcrop.					
RtcC3: Ryker-----	Moderate: percs slowly, slope.	Severe: slope.	Severe: depth to rock.	Moderate: slope.	Fair: slope, too clayey.
SfoA: Shakamak-----	Severe: percs slowly, wetness.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
SfyB2: Shircliff-----	Severe: percs slowly, wetness.	Moderate: seepage, slope.	Severe: too clayey, wetness.	Moderate: wetness.	Poor: hard to pack, too clayey.
SfyC2: Shircliff-----	Severe: percs slowly, wetness.	Severe: slope.	Severe: too clayey, wetness.	Moderate: wetness.	Poor: hard to pack, too clayey.
SneC2: Solsberry-----	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness.	Moderate: slope, wetness.	Fair: slope, small stones, too clayey.

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
SneC3: Solsberry-----	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness.	Moderate: slope, wetness.	Fair: slope, small stones, too clayey.
SneD2: Solsberry-----	Severe: percs slowly, slope, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope.	Poor: slope.
SneD3: Solsberry-----	Severe: percs slowly, slope, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope.	Poor: slope.
SneD5: Solsberry-----	Severe: percs slowly, slope, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope.	Poor: slope.
StaAV: Steff-----	Severe: flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Fair: wetness.
StdAH: Stendal-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.
StfB2: Stinesville----	Slight-----	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey.
StfC2: Stinesville----	Moderate: slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: slope, too clayey.
StgC2: Stinesville----	Slight-----	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey.
Ryker-----	Severe: poor filter.	Severe: seepage, slope.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: too clayey.
Grayford-----	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage.
StgD2: Stinesville----	Moderate: slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: slope, too clayey.

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
StgD2:					
Ryker-----	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: seepage, slope.	Poor: slope.
Grayford-----	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, depth to rock, slope.	Severe: seepage, slope.	Poor: seepage, slope.
SupAH:					
Stonelick-----	Severe: flooding.	Severe: flooding, seepage.	Severe: flooding, seepage.	Severe: flooding, seepage.	Fair: thin layer, seepage.
SwhG:					
Stubenville-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Hickory-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
TadA:					
Taggart-----	Severe: percs slowly, wetness.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
TahB:					
Tapawingo-----	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----	Fair: small stones, too clayey.
Nawakwa-----	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----	Fair: small stones, too clayey.
TcgG:					
Tipsaw-----	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, slope, small stones.
Rock outcrop.					
TtaG:					
Tulip-----	Severe: percs slowly, slope, wetness.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope, small stones.
Tipsaw-----	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, slope, small stones.
TtcE:					
Tulip-----	Severe: percs slowly, slope, wetness.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope, small stones.

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
TtcE:					
Wellston-----	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope.
Adyeville-----	Severe: depth to rock, slope, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope, small stones.
Uaa:					
Udorthents.					
VdgA:					
Vigo-----	Severe: percs slowly, wetness.	Slight-----	Severe: wetness.	Severe: wetness.	Poor: wetness.
WeaA:					
Wea-----	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Slight-----	Fair: small stones, thin layer.
Elston-----	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage.
WeaAQ:					
Wea-----	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Moderate: flooding.	Fair: small stones, thin layer.
Elston-----	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage.
WhfD2:					
Wellston-----	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope.
WlmaK:					
Whitaker-----	Severe: flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: wetness.
WokAH:					
Wilbur-----	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
WolAI:					
Wilhite-----	Severe: flooding, percs slowly, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: hard to pack, ponding, too clayey.
WomAH:					
Wilhite-----	Severe: flooding, percs slowly, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: hard to pack, ponding, too clayey.

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
WprAQ: Wirt-----	Moderate: flooding.	Severe: seepage.	Severe: seepage.	Moderate: flooding.	Good.
WpuAK: Wirt-----	Severe: flooding.	Severe: flooding, seepage.	Severe: flooding, seepage.	Severe: flooding, seepage.	Good.
WpuAV: Wirt-----	Severe: flooding.	Severe: flooding, seepage.	Severe: flooding, seepage.	Severe: flooding, seepage.	Good.
WpyBJ: Wirt-----	Severe: flooding.	Severe: flooding, seepage.	Severe: flooding, seepage.	Severe: flooding.	Good.
Pekin-----	Severe: flooding, percs slowly, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Fair: too clayey, wetness.
ZamB2: Zanesville-----	Severe: percs slowly, wetness.	Moderate: seepage, slope.	Moderate: too clayey, wetness.	Moderate: wetness.	Fair: too clayey, wetness.
ZamC2: Zanesville-----	Severe: percs slowly, wetness.	Severe: slope.	Moderate: slope, too clayey, wetness.	Moderate: slope, wetness.	Fair: slope, too clayey, wetness.
ZamC3: Zanesville-----	Severe: percs slowly, wetness.	Severe: slope.	Moderate: slope, too clayey, wetness.	Moderate: slope, wetness.	Fair: slope, too clayey, wetness.
ZamD2: Zanesville-----	Severe: percs slowly, slope, wetness.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
ZamD5: Zanesville-----	Severe: percs slowly, slope, wetness.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
ZapD3: Zanesville-----	Severe: percs slowly, slope, wetness.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Tulip-----	Severe: percs slowly, slope, wetness.	Severe: slope.	Severe: depth to rock, slope, too acid.	Severe: slope.	Poor: slope, small stones.

Table 15.--Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
AbgAU:				
Adrian-----	Poor: wetness.	Probable-----	Improbable: too sandy.	Poor: excess humus, wetness.
AfeC:				
Alvin-----	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
Bloomfield-----	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
AfeD:				
Alvin-----	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: slope, too sandy.
Bloomfield-----	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: slope, too sandy.
AffE:				
Alvin-----	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: slope, too sandy.
Bloomfield-----	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: slope, too sandy.
Princeton-----	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
AfsB:				
Alvin-----	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
Princeton-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
AfsC:				
Alvin-----	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
Princeton-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
AftD:				
Alvin-----	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: slope, too sandy.
Princeton-----	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
AhrAK:				
Armiesburg-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

Table 15.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
AkeB2: Arney-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
AloB2: Ava-----	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
AmkA: Ayrshire-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
BdxAV: Belknap-----	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
BgeAH: Birds-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
BodAV: Bonnie-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
CkkB2: Cincinnati-----	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
CkkC2: Cincinnati-----	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
CkkC3: Cincinnati-----	Poor: low strength,	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
CkkD2: Cincinnati-----	Fair: low strength, shrink-swell, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
CkkD3: Cincinnati-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
CspC2: Crider-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
CspC3: Crider-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.

Table 15.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
DfnA:				
Dubois-----	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
EaaD2:				
Ebal-----	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope, too clayey.
GaaE2:				
Gallimore-----	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: slope.
GabG:				
Gallimore-----	Poor: slope.	Probable-----	Improbable: too sandy.	Poor: slope.
Chetwynd-----	Poor: slope.	Probable-----	Improbable: too sandy.	Poor: slope, small stones.
GblAH:				
Gessie-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Good.
GmcD3:				
Grayford-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
GmcE2:				
Grayford-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
GmhD2:				
Grayford-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Ryker-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
GmpE2:				
Greybrook-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
GmpF:				
Greybrook-----	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
HarD2:				
Haggatt-----	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, too clayey.
HarD3:				
Haggatt-----	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, too clayey.
HasE2:				
Haggatt-----	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, too clayey.

Table 15.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
HasE2: Caneyville-----	Poor: depth to rock, low strength, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, too clayey.
HccA: Haubstadt-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
HccB2: Haubstadt-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
HccC3: Haubstadt-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
HcgAH: Haymond-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Good.
HchA: Haymond-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Good.
HefG: Hickory-----	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
HelD2: Hickory-----	Fair: slope, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Stinesville----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
HeoE: Hickory-----	Fair: slope, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
HeoE3: Hickory-----	Fair: slope, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
HeoG: Hickory-----	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
HepG: Hickory-----	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Adyeville-----	Poor: thin layer, depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.

Table 15.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
HesG:				
Hickory-----	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Chetwynd-----	Poor: slope.	Probable-----	Improbable: too sandy.	Poor: slope, small stones.
HeuE:				
Hickory-----	Fair: slope, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Wellston-----	Fair: thin layer, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, slope, small stones.
HeuF:				
Hickory-----	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Wellston-----	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, slope, small stones.
HkaB:				
Hollybrook-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
HleAV:				
Holton-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
HnoA:				
Hoosierville----	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Lnfa:				
Lieber-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Lnfb:				
Lieber-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
MecA:				
Martinsville----	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, too clayey.
MecAQ:				
Martinsville----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, too clayey.

Table 15.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
MecB: Martinsville----	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, too clayey.
MhhAH: McAdoo-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
MhhAK: McAdoo-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
MhuA: McGary-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
MrcG: Minnehaha-----	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
MsvA: Montgomery-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
MvrAH: Moundhaven-----	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
NbhAH: Newark-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
OfaAV: Oldenburg-----	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
OfcAV: Oldenburg-----	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
OfeB: Olephant-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
OmkC2: Otwell-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
OmkC3: Otwell-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
OmkD3: Otwell-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.

Table 15.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
PbbC2: Parke-----	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
PbbC3: Parke-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
PbbD2: Parke-----	Fair: slope, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
PbbD3: Parke-----	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
PcnA: Patrickburg----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
PcrAQ: Pekin-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, too clayey.
PcrB2: Pekin-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, too clayey.
PcrC2: Pekin-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, thin layer, too clayey.
PhaA: Peoga-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
PhaAP: Peoga-----	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
PlcAV: Piankeshaw-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
PlfA: Pike-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
PlfB2: Pike-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Pml: Pits, quarry.				

Table 15.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
PrwAV: Pope-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
PryB: Potawatomi-----	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
PsaD3: Pottersville----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
PsaG: Pottersville----	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
PsbF: Pottersville----	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Rnn: Riverwash.				
RpzG: Romona-----	Poor: depth to rock, low strength, shrink-swell.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, slope, too clayey.
Corydon-----	Poor: depth to rock, low strength, shrink-swell.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: depth to rock, large stones, too clayey.
Rock outcrop.				
RtcC3: Ryker-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
SfoA: Shakamak-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
SfyB2: Shircliff-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
SfyC2: Shircliff-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
SneC2: Solsberry-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
SneC3: Solsberry-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.

Table 15.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
SneD2: Solsberry-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
SneD3: Solsberry-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
SneD5: Solsberry-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
StaAV: Steff-----	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
StdAH: Stendal-----	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
StfB2: Stinesville----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
StfC2: Stinesville----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
StgC2: Stinesville----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Ryker-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
Grayford-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, small stones, too clayey.
StgD2: Stinesville----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
Ryker-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Grayford-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
SupAH: Stonelick-----	Good-----	Probable-----	Improbable: too sandy.	Fair: small stones.
SwhG: Stubenville----	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Hickory-----	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.

Table 15.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
TadA: Taggart-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
TahB: Tapawingo-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Nawakwa-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, too clayey.
TcgG: Tipsaw-----	Poor: depth to rock, slope, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
Rock outcrop.				
TtaG: Tulip-----	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
Tipsaw-----	Poor: depth to rock, slope, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
TtcE: Tulip-----	Fair: low strength, slope, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
Wellston-----	Fair: thin layer, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, slope, small stones.
Adyeville-----	Poor: depth to rock, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
Uaa: Udorthents.				
VdgA: Vigo-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
W: Water.				
WeaA: Wea-----	Good-----	Probable-----	Improbable: too sandy.	Poor: small stones.
Elston-----	Good-----	Probable-----	Improbable: too sandy.	Fair: area reclaim, small stones.

Table 15.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
WeaAQ:				
Wea-----	Good-----	Probable-----	Improbable: too sandy.	Poor: small stones.
Elston-----	Good-----	Probable-----	Improbable: too sandy.	Fair: small stones.
WhfD2:				
Wellston-----	Fair: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, slope, small stones.
WlmAK:				
Whitaker-----	Poor: wetness.	Probable-----	Improbable: too sandy.	Poor: wetness.
WokAH:				
Wilbur-----	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
WolAI:				
Wilhite-----	Poor: low strength, shrink-swell, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
WomAH:				
Wilhite-----	Poor: low strength, shrink-swell, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
WprAQ:				
Wirt-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, small stones.
WpuAK:				
Wirt-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
WpuAV:				
Wirt-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
WpyBJ:				
Wirt-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Good.
Pekin-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
ZamB2:				
Zanesville-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
ZamC2:				
Zanesville-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.

Table 15.--Construction Materials--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
ZamC3: Zanesville-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
ZamD2: Zanesville-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
ZamD5: Zanesville-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
ZapD3: Zanesville-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Tulip-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.

Table 16.--Water Management

(See text for definitions of terms used in this table. Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation.)

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
AbgAU:							
Adrian-----	Severe: seepage.	Severe: excess humus, ponding, seepage.	Severe: cutbanks cave.	Cutbanks cave, ponding, subsidence.	Ponding, soil blowing.	Ponding, soil blowing, too sandy.	Wetness.
AfeC:							
Alvin-----	Severe: seepage, slope.	Severe: piping, seepage.	Severe: no water.	Deep to water	Soil blowing, fast intake, slope.	Soil blowing, slope.	Slope.
Bloomfield-----	Severe: seepage, slope.	Severe: piping, seepage.	Severe: no water.	Deep to water	Soil blowing, fast intake, slope.	Slope, soil blowing, too sandy.	Slope.
AfeD:							
Alvin-----	Severe: seepage, slope.	Severe: piping, seepage.	Severe: no water.	Deep to water	Soil blowing, fast intake, slope.	Soil blowing, slope.	Slope.
Bloomfield-----	Severe: seepage, slope.	Severe: piping, seepage.	Severe: no water.	Deep to water	Soil blowing, fast intake, slope.	Slope, soil blowing, too sandy.	Slope.
AffE:							
Alvin-----	Severe: seepage, slope.	Severe: piping, seepage.	Severe: no water.	Deep to water	Soil blowing, fast intake, slope.	Soil blowing, slope.	Slope.
Bloomfield-----	Severe: seepage, slope.	Severe: piping, seepage.	Severe: no water.	Deep to water	Soil blowing, fast intake, slope.	Slope, soil blowing, too sandy.	Slope.
Princeton-----	Severe: seepage, slope.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.	Soil blowing, slope.	Slope.
AfsB:							
Alvin-----	Severe: seepage.	Severe: piping, seepage.	Severe: no water.	Deep to water	Soil blowing, slope.	Soil blowing	Favorable.
Princeton-----	Severe: seepage.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.	Soil blowing	Favorable.
AfsC:							
Alvin-----	Severe: seepage, slope.	Severe: piping, seepage.	Severe: no water.	Deep to water	Slope, soil blowing.	Slope, soil blowing.	Slope.
Princeton-----	Severe: seepage, slope.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.	Slope, soil blowing.	Slope.
AftD:							
Alvin-----	Severe: seepage, slope.	Severe: piping, seepage.	Severe: no water.	Deep to water	Slope, soil blowing.	Slope, soil blowing.	Slope.

Table 16.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
AftD: Princeton-----	Severe: seepage, slope.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.	Slope, soil blowing.	Slope.
AhrAK: Armiesburg-----	Moderate: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
AkeB2: Arney-----	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
AloB2: Ava-----	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, percs slowly.
AmkA: Ayrshire-----	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Frost action	Soil blowing	Soil blowing, wetness.	Wetness.
BdxAV: Belknap-----	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Erodes easily, flooding.	Erodes easily, wetness.	Erodes easily, wetness.
BgeAH: Birds-----	Slight-----	Severe: ponding.	Moderate: slow refill.	Flooding, frost action, ponding.	Erodes easily, flooding, ponding.	Erodes easily, ponding.	Erodes easily, wetness.
BodAV: Bonnie-----	Slight-----	Severe: ponding.	Moderate: slow refill.	Flooding, frost action, ponding.	Erodes easily, flooding, ponding.	Erodes easily, wetness.	Erodes easily, wetness.
CkkB2: Cincinnati-----	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, percs slowly.
CkkC2: Cincinnati-----	Severe: slope.	Severe: piping.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, slope, percs slowly.
CkkC3: Cincinnati-----	Severe: slope.	Severe: piping.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, slope, percs slowly.

Table 16.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
CkkD2: Cincinnati-----	Severe: slope.	Severe: piping.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, slope, percs slowly.
CkkD3: Cincinnati-----	Severe: slope.	Severe: piping.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, slope, percs slowly.
CspC2: Crider-----	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
CspC3: Crider-----	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
DfnA: Dubois-----	Moderate: seepage.	Severe: piping, wetness.	Severe: no water.	Frost action, percs slowly.	Percs slowly, erodes easily.	Erodes easily, wetness, percs slowly, rooting depth.	Erodes easily, wetness, rooting depth, percs slowly.
EaaD2: Ebal-----	Severe: slope.	Severe: hard to pack.	Severe: no water.	Frost action, Percs slowly, slope.	Erodes easily, slope.	Erodes easily, slope, wetness.	Percs slowly, erodes easily, slope.
GaaE2: Gallimore-----	Severe: seepage, slope.	Severe: piping, seepage.	Severe: no water.	Deep to water	Slope-----	Erodes easily, slope.	Erodes easily, slope.
GabG: Gallimore-----	Severe: seepage, slope.	Severe: piping, seepage.	Severe: no water.	Deep to water	Slope-----	Erodes easily, slope.	Erodes easily, slope.
Chetwynd-----	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope-----	Slope, erodes easily.	Slope, erodes easily.
GblAH: Gessie-----	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Flooding-----	Erodes easily	Erodes easily.
GmcD3: Grayford-----	Severe: slope, seepage.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
GmcE2: Grayford-----	Severe: slope, seepage.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.

Table 16.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
GmhD2:							
Grayford-----	Severe: slope, seepage.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
Ryker-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
GmpE2:							
Greybrook-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Percs slowly, slope, erodes easily.	Erodes easily, percs slowly, slope.	Erodes easily, percs slowly, slope.
GmpF:							
Greybrook-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Percs slowly, slope, erodes easily.	Erodes easily, percs slowly, slope.	Erodes easily, percs slowly, slope.
HarD2:							
Haggatt-----	Severe: slope, seepage.	Severe: hard to pack.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
HarD3:							
Haggatt-----	Severe: slope, seepage.	Severe: hard to pack.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
HasE2:							
Haggatt-----	Severe: slope, seepage.	Severe: hard to pack.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Droughty, erodes easily, slope.
Caneyville-----	Severe: slope, seepage.	Severe: hard to pack, thin layer.	Severe: no water.	Deep to water	Depth to rock, erodes easily, slope.	Depth to rock, slope, erodes easily.	Depth to rock, slope, erodes easily.
HccA:							
Haubstadt-----	Moderate: seepage.	Moderate: piping, thin layer, wetness.	Severe: no water.	Frost action, percs slowly.	Percs slowly, erodes easily.	Erodes easily, wetness, percs slowly, rooting depth.	Erodes easily, percs slowly, rooting depth.
HccB2:							
Haubstadt-----	Moderate: seepage, slope.	Moderate: piping, thin layer, wetness.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, percs slowly.
HccC3:							
Haubstadt-----	Severe: slope.	Moderate: piping, thin layer, wetness.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, rooting depth, percs slowly.	Erodes easily, slope, wetness, percs slowly, rooting depth.
HcgAH:							
Haymond-----	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.

Table 16.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
HchA:							
Haymond-----	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
HefG:							
Hickory-----	Severe: slope.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
HelD2:							
Hickory-----	Severe: slope, seepage.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
Stinesville----	Severe: slope, seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
HeoE:							
Hickory-----	Severe: slope.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
HeoE3:							
Hickory-----	Severe: slope.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
HeoG:							
Hickory-----	Severe: slope.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
HepG:							
Hickory-----	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
Adyeville-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock, slope.	Depth to rock, slope.	Depth to rock, slope.
HesG:							
Hickory-----	Severe: slope.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
Chetwynd-----	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope-----	Slope-----	Slope.
HeuE:							
Hickory-----	Severe: slope.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
Wellston-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
HeuF:							
Hickory-----	Severe: slope.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
Wellston-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.

Table 16.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
HkaB: Hollybrook-----	Moderate: slope.	Severe: piping, wetness.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope.	Erodes easily, percs slowly, wetness.	Erodes easily, wetness.
HleAV: Holton-----	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, frost action.	Erodes easily, flooding.	Erodes easily, wetness.	Erodes easily, wetness.
HnoA: Hoosierville----	Moderate: seepage.	Severe: piping, ponding.	Severe: no water.	Frost action, ponding.	Erodes easily, percs slowly, ponding.	Erodes easily, ponding, percs slowly.	Erodes easily, wetness.
Lnfa: Lieber-----	Moderate: seepage.	Severe: wetness.	Severe: no water.	Frost action, percs slowly.	Percs slowly, erodes easily.	Erodes easily, percs slowly, wetness.	Erodes easily, rooting depth, wetness, percs slowly.
LnfB: Lieber-----	Moderate: seepage, slope.	Severe: wetness.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, percs slowly, wetness.	Erodes easily, rooting depth, wetness, percs slowly.
MecA: Martinsville----	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable-----	Favorable-----	Favorable.
MecAQ: Martinsville----	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable-----	Favorable-----	Favorable.
MecB: Martinsville----	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope-----	Favorable-----	Favorable.
MhhAH: McAdoo-----	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
MhhAK: McAdoo-----	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
MhuA: McGary-----	Slight-----	Severe: wetness.	Severe: no water.	Frost action, percs slowly.	Percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Erodes easily, wetness, percs slowly.
MrcG: Minnehaha-----	Severe: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Droughty, slope.	Slope-----	Droughty, slope.
MsvA: Montgomery-----	Slight-----	Severe: hard to pack, ponding.	Severe: slow refill.	Frost action, percs slowly, ponding.	Percs slowly, ponding.	Erodes easily, percs slowly, ponding.	Erodes easily, percs slowly, wetness.

Table 16.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
MvrAH: Moundhaven-----	Severe: seepage.	Severe: piping, seepage.	Severe: no water.	Deep to water	Droughty, fast intake, flooding.	Soil blowing, too sandy.	Droughty.
NbhAH: Newark-----	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Erodes easily, flooding.	Erodes easily, wetness.	Erodes easily, wetness.
OfaAV: Oldenburg-----	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, frost action.	Erodes easily, flooding.	Erodes easily, wetness.	Erodes easily.
OfcAV: Oldenburg-----	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Flooding, soil blowing.	Soil blowing, wetness.	Favorable.
OfeB: Olephant-----	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
OmkC2: Otwell-----	Severe: slope.	Moderate: thin layer, wetness.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly.	Erodes easily, rooting depth, slope, percs slowly.
OmkC3: Otwell-----	Severe: slope.	Moderate: thin layer, wetness.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly.	Erodes easily, rooting depth, slope, percs slowly.
OmkD3: Otwell-----	Severe: slope.	Moderate: thin layer, wetness.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly.	Erodes easily, rooting depth, slope, percs slowly.
PbbC2: Parke-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
PbbC3: Parke-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
PbbD2: Parke-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
PbbD3: Parke-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
PcnA: Patrickburg----	Moderate: seepage.	Severe: piping, wetness.	Severe: no water.	Frost action, percs slowly.	Percs slowly, erodes easily.	Erodes easily, percs slowly, wetness, rooting depth.	Erodes easily, rooting depth, wetness, percs slowly.

Table 16.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
PcrAQ: Pekin-----	Moderate: seepage.	Severe: piping.	Severe: no water.	Frost action, percs slowly.	Percs slowly, erodes easily.	Erodes easily, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, percs slowly.
PcrB2: Pekin-----	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, percs slowly.
PcrC2: Pekin-----	Severe: slope.	Severe: piping.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, slope, percs slowly.
PhaA: Peoga-----	Slight-----	Severe: ponding.	Severe: no water.	Frost action, percs slowly, ponding.	Percs slowly, erodes easily, rooting depth, ponding.	Erodes easily, percs slowly, ponding.	Erodes easily, rooting depth, wetness, percs slowly.
PhaAP: Peoga-----	Slight-----	Severe: ponding.	Severe: slow refill.	Frost action, ponding.	Erodes easily, percs slowly, ponding.	Erodes easily, ponding, percs slowly.	Erodes easily, wetness, percs slowly.
PlcAV: Piankeshaw-----	Moderate: seepage.	Moderate: large stones, seepage, piping.	Severe: no water.	Deep to water	Flooding-----	Large stones	Large stones.
PlfA: Pike-----	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
PlfB2: Pike-----	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily	Erodes easily.
Pml: Pits, quarry.							
PrwAV: Pope-----	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Flooding, soil blowing.	Soil blowing	Favorable.
PryB: Potawatomi-----	Moderate: seepage.	Severe: piping.	Severe: no water.	Frost action, percs slowly.	Percs slowly, erodes easily.	Erodes easily, percs slowly, wetness, rooting depth.	Erodes easily, rooting depth, wetness, percs slowly.
PsaD3: Pottersville----	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Erodes easily, percs slowly, slope.	Erodes easily, slope, percs slowly.	Erodes easily, slope.

Table 16.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
PsaG: Pottersville----	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Erodes easily, percs slowly, slope.	Erodes easily, slope, percs slowly.	Erodes easily, slope.
PsbF: Pottersville----	Severe: slope, seepage.	Severe: thin layer.	Severe: no water.	Deep to water	Erodes easily, percs slowly, slope.	Erodes easily, slope, percs slowly.	Erodes easily, slope.
Rnn: Riverwash.							
RpzG: Romona-----	Severe: slope, seepage.	Severe: large stones, hard to pack.	Severe: no water.	Deep to water	Depth to rock, large stones, slope.	Depth to rock, large stones, slope.	Depth to rock, large stones, slope.
Corydon-----	Severe: depth to rock, slope, seepage.	Severe: hard to pack, large stones.	Severe: no water.	Deep to water	Depth to rock, large stones, slope.	Depth to rock, large stones, slope.	Large stones, slope, depth to rock.
Rock outcrop.							
RtcC3: Ryker-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
SfoA: Shakamak-----	Moderate: seepage.	Severe: piping.	Severe: no water.	Frost action, percs slowly.	Percs slowly, erodes easily.	Erodes easily, percs slowly, wetness, rooting depth.	Erodes easily, percs slowly, rooting depth.
SfyB2: Shircliff-----	Moderate: slope.	Moderate: wetness, hard to pack.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
SfyC2: Shircliff-----	Severe: slope.	Moderate: wetness, hard to pack.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness.	Erodes easily, percs slowly, slope.
SneC2: Solsberry-----	Severe: slope.	Severe: piping.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, slope, percs slowly.
SneC3: Solsberry-----	Severe: slope.	Severe: piping.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, slope, percs slowly.

Table 16.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
SneD2: Solsberry-----	Severe: slope.	Severe: piping.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, slope, percs slowly.
SneD3: Solsberry-----	Severe: slope.	Severe: piping.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, slope, percs slowly.
SneD5: Solsberry-----	Severe: slope.	Severe: piping.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, slope, percs slowly.
StaAV: Steff-----	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Erodes easily, flooding.	Erodes easily, wetness.	Erodes easily.
StdAH: Stendal-----	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill, deep to water.	Flooding, frost action.	Erodes easily, flooding.	Erodes easily, wetness.	Erodes easily, wetness.
StfB2: Stinesville----	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily	Erodes easily.
StfC2: Stinesville----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
StgC2: Stinesville----	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily	Erodes easily.
Ryker-----	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
Grayford-----	Severe: slope, seepage.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
StgD2: Stinesville----	Severe: slope, seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
Ryker-----	Severe: slope, seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
Grayford-----	Severe: slope, seepage.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.

Table 16.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
SupAH: Stonelick-----	Severe: seepage.	Severe: piping, seepage.	Severe: no water.	Deep to water	Flooding, soil blowing.	Soil blowing	Favorable.
SwhG: Stubenville-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
Hickory-----	Severe: slope.	Moderate: piping, thin layer.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
TadA: Taggart-----	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Frost action	Percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Erodes easily, wetness.
TahB: Tapawingo-----	Moderate: slope.	Moderate: piping.	Severe: no water.	Deep to water	Droughty, percs slowly, slope.	Erodes easily, percs slowly.	Droughty, erodes easily, rooting depth.
Nawakwa-----	Moderate: slope.	Moderate: piping.	Severe: no water.	Deep to water	Droughty, percs slowly, slope.	Erodes easily, percs slowly.	Droughty, erodes easily, rooting depth.
TcgG: Tipsaw-----	Severe: seepage, slope.	Severe: piping, seepage.	Severe: no water.	Deep to water	Depth to rock, percs slowly, slope.	Depth to rock, large stones, slope.	Depth to rock, large stones, slope.
Rock outcrop.							
TtaG: Tulip-----	Severe: slope.	Severe: piping.	Severe: no water.	Slope, frost action.	Percs slowly, slope.	Large stones, slope, wetness.	Large stones, slope.
Tipsaw-----	Severe: seepage, slope.	Severe: piping, seepage.	Severe: no water.	Deep to water	Depth to rock, percs slowly, slope.	Depth to rock, large stones, slope.	Depth to rock, large stones, slope.
TtcE: Tulip-----	Severe: slope.	Severe: piping.	Severe: no water.	Slope, frost action.	Percs slowly, slope.	Large stones, slope, wetness.	Large stones, slope.
Wellston-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
Adyeville-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock, slope.	Depth to rock, slope.	Depth to rock, slope.
Uaa: Udorthents.							
VdgA: Vigo-----	Slight-----	Severe: piping, wetness.	Severe: no water.	Frost action	Percs slowly, erodes easily.	Erodes easily, wetness.	Erodes easily, wetness.
W: Water.							

Table 16.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
WeaA:							
Wea-----	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable-----	Favorable-----	Favorable.
Elston-----	Severe: seepage.	Severe: piping, seepage.	Severe: no water.	Deep to water	Soil blowing	Soil blowing	Favorable.
WeaAQ:							
Wea-----	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable-----	Favorable-----	Favorable.
Elston-----	Severe: seepage.	Severe: piping, seepage.	Severe: no water.	Deep to water	Soil blowing	Soil blowing	Favorable.
WhfD2:							
Wellston-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
WlmAK:							
Whitaker-----	Severe: seepage.	Severe: piping, wetness.	Moderate: cutbanks cave, slow refill.	Flooding, frost action.	Flooding-----	Erodes easily, soil blowing, wetness.	Erodes easily, wetness.
WokAH:							
Wilbur-----	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill, deep to water.	Flooding, frost action.	Erodes easily, flooding.	Erodes easily, wetness.	Erodes easily.
WolAI:							
Wilhite-----	Slight-----	Severe: ponding.	Severe: slow refill.	Flooding, percs slowly, ponding.	Flooding, ponding, slow intake, percs slowly.	Percs slowly, ponding.	Percs slowly, wetness.
WomAH:							
Wilhite-----	Slight-----	Severe: ponding.	Severe: slow refill.	Flooding, percs slowly, ponding.	Ponding, percs slowly, flooding.	Percs slowly, ponding.	Percs slowly, wetness.
WprAQ:							
Wirt-----	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
WpuAK:							
Wirt-----	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
WpuAV:							
Wirt-----	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
WpyBJ:							
Wirt-----	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
Pekin-----	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Flooding, frost action, percs slowly.	Percs slowly, slope, flooding.	Erodes easily, percs slowly, wetness.	Erodes easily, percs slowly, rooting depth.

Table 16.--Water Management--Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
ZamB2: Zanesville-----	Moderate: seepage, slope.	Severe: thin layer.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, percs slowly.
ZamC2: Zanesville-----	Severe: slope.	Severe: thin layer.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, slope, percs slowly.
ZamC3: Zanesville-----	Severe: slope.	Severe: thin layer.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, slope, percs slowly.
ZamD2: Zanesville-----	Severe: slope.	Severe: thin layer.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, slope, percs slowly.
ZamD5: Zanesville-----	Severe: slope.	Severe: thin layer.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, slope, percs slowly.
ZapD3: Zanesville-----	Severe: slope.	Severe: thin layer.	Severe: no water.	Frost action, percs slowly, slope.	Percs slowly, slope, erodes easily.	Erodes easily, slope, wetness, percs slowly, rooting depth.	Erodes easily, rooting depth, slope, percs slowly.
Tulip-----	Severe: slope.	Severe: piping.	Severe: no water.	Slope-----	Percs slowly, slope.	Large stones, slope, wetness.	Large stones, slope.

Table 17.--Engineering Index Properties

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
AbgAU:												
Adrian-----	0-40	Muck-----	PT	A-8	0	0	0	0	0	0	---	NP
	40-60	Gravelly sand, loamy sand, fine sand.	SM, SP	A-1, A-2, A-3	0	0	80-100	60-100	35-75	0-30	0-14	NP
AfeC:												
Alvin-----	0-9	Loamy sand----	SM	A-2-4	0	0	100	100	70-90	15-30	0-20	NP-4
	9-12	Fine sandy loam, sandy loam, loamy sand.	ML, SM	A-2-4, A-4	0	0	100	100	70-100	15-60	0-25	NP-4
	12-28	Fine sandy loam, sandy loam, loam.	CL, ML, SC, SM	A-2, A-4, A-6	0	0	100	100	70-100	20-80	15-40	NP-15
	28-80	Fine sandy loam, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3, A-4	0	0	100	100	50-85	5-45	0-20	NP-4
Bloomfield-----	0-8	Loamy sand----	SM, SP, SP-SM	A-2-4	0	0	100	100	70-90	15-30	0-14	NP
	8-16	Loamy sand, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	70-100	5-35	0-14	NP
	16-70	Fine sandy loam, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	70-100	5-35	0-20	NP-3
	70-80	Fine sand, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	70-100	5-35	0-20	NP-3
AfeD:												
Alvin-----	0-9	Loamy sand----	SM	A-2-4	0	0	100	100	70-90	15-30	0-20	NP-4
	9-12	Fine sandy loam, sandy loam, loamy sand.	ML, SM	A-2-4, A-4	0	0	100	100	70-100	15-60	0-25	NP-4
	12-28	Fine sandy loam, sandy loam, loam.	CL, ML, SC, SM	A-2, A-4, A-6	0	0	100	100	70-100	20-80	15-40	NP-15
	28-80	Sand, fine sandy loam, loamy fine sand.	SM, SP, SP-SM	A-2-4, A-3, A-4	0	0	100	100	50-85	5-45	0-20	NP-4
Bloomfield-----	0-8	Loamy sand----	SM, SP, SP-SM	A-2-4	0	0	100	100	70-90	15-30	0-14	NP
	8-35	Loamy sand, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	70-100	5-35	0-14	NP
	35-70	Fine sand, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	70-100	5-35	0-20	NP-3
	70-80	Fine sand, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	70-100	5-35	0-20	NP-3

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
AffE: Alvin-----	0-9	Loamy sand----	SM	A-2-4	0	0	100	100	70-90	15-30	0-20	NP-4
	9-12	Fine sandy loam, sandy loam, loamy sand.	ML, SM	A-2-4, A-4	0	0	100	100	70-100	15-60	0-25	NP-4
	12-28	Fine sandy loam, sandy loam, loam.	CL, ML, SC, SM	A-2, A-4, A-6	0	0	100	100	70-100	20-80	15-40	NP-15
	28-80	Fine sandy loam, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3, A-4	0	0	100	100	50-85	5-45	0-20	NP-4
Bloomfield-----	0-8	Loamy sand----	SM, SP, SP-SM	A-2-4	0	0	100	100	70-90	15-35	0-14	NP
	8-35	Loamy sand, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	70-100	5-35	0-14	NP
	35-70	Fine sand, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	70-100	5-35	0-20	NP-3
	70-80	Fine sand, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	70-100	5-35	0-20	NP-3
Princeton-----	0-8	Fine sandy loam.	CL, ML, SC, SM	A-2-4, A-4	0	0	100	100	80-100	25-50	15-25	NP-10
	8-41	Sandy clay loam, fine sandy loam, loam.	CL, SC	A-4, A-6	0	0	100	100	70-90	35-70	25-35	8-18
	41-60	Sand, loamy fine sand, loam.	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0	0	100	100	60-90	30-70	15-25	5-15
	60-80	Stratified fine sand to loam.	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	100	100	65-90	20-65	0-20	NP-5
AfsB: Alvin-----	0-9	Fine sandy loam.	ML, SM	A-2-4, A-4	0	0	100	100	80-100	25-50	0-25	NP-4
	9-12	Fine sandy loam, sandy loam, loamy sand.	ML, SM	A-2-4, A-4	0	0	100	100	70-100	15-60	0-25	NP-4
	12-28	Fine sandy loam, sandy loam, loam.	CL, ML, SC, SM	A-2, A-4, A-6	0	0	100	100	70-100	20-80	15-40	NP-15
	28-80	Fine sandy loam, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3, A-4	0	0	100	100	50-85	5-45	0-20	NP-4

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches						
							4	10	40	200		
	In				Pct	Pct					Pct	
AfsB: Princeton-----	0-8	Fine sandy loam.	CL, ML, SC, SM	A-2-4, A-4	0	0	100	100	80-100	25-50	15-25	NP-10
	8-41	Sandy clay loam, fine sandy loam, loam.	CL, SC	A-4, A-6	0	0	100	100	70-90	35-70	25-35	8-18
	41-60	Sand, loamy fine sand, loam.	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0	0	100	100	60-90	30-70	15-25	5-15
	60-80	Stratified fine sand to loam.	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	100	100	65-90	20-65	0-20	NP-5
AfsC: Alvin-----	0-9	Fine sandy loam.	ML, SM	A-2-4, A-4	0	0	100	100	80-100	25-50	0-25	NP-4
	9-12	Fine sandy loam, sandy loam, loamy sand.	ML, SM	A-2-4, A-4	0	0	100	100	70-100	15-60	0-25	NP-4
	12-28	Fine sandy loam, sandy loam, loam.	CL, ML, SC, SM	A-2, A-4, A-6	0	0	100	100	70-100	20-80	15-40	NP-15
	28-80	Fine sandy loam, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3, A-4	0	0	100	100	50-85	5-45	0-20	NP-4
Princeton-----	0-8	Fine sandy loam.	CL, ML, SC, SM	A-2-4, A-4	0	0	100	100	80-100	25-50	15-25	NP-10
	8-41	Sandy clay loam, fine sandy loam, loam.	CL, SC	A-4, A-6	0	0	100	100	70-90	35-70	25-35	8-18
	41-60	Sand, loamy fine sand, loam.	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0	0	100	100	60-90	30-70	15-25	5-15
	60-80	Stratified fine sand to loam.	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	100	100	65-90	20-65	0-20	NP-5
AftD: Alvin-----	0-9	Sandy loam-----	ML, SM	A-2-4, A-4	0	0	100	100	70-90	20-35	0-25	NP-4
	9-12	Fine sandy loam, sandy loam, loamy sand.	ML, SM	A-2-4, A-4	0	0	100	100	70-100	15-60	0-25	NP-4
	12-28	Fine sandy loam, sandy loam, loam.	CL, ML, SC, SM	A-2, A-4, A-6	0	0	100	100	70-100	20-80	15-40	NP-15
	28-80	Fine sandy loam, loamy fine sand, sand.	SM, SP, SP-SM	A-2-4, A-3, A-4	0	0	100	100	50-85	5-45	0-20	NP-4

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
AftD: Princeton-----	0-8	Sandy loam-----	CL, ML, SC, SM	A-2-4, A-4	0	0	100	100	70-90	20-35	15-25	NP-10
	8-41	Sandy clay loam, fine sandy loam, loam.	CL, SC	A-4, A-6	0	0	100	100	70-90	35-70	25-35	8-18
	41-60	Sand, loamy fine sand, loam.	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0	0	100	100	60-90	30-70	15-25	5-15
	60-80	Stratified fine sand to loam.	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	100	100	65-90	20-65	0-20	NP-5
AhrAK: Armiesburg-----	0-16	Silty clay loam.	CH, CL	A-6, A-7	0	0	100	100	95-100	80-95	35-55	20-35
	16-38	Silty clay loam, silt loam.	CH, CL	A-6, A-7	0	0	100	100	95-100	80-95	34-55	15-35
	38-60	Silty clay loam, silt loam.	CH, CL	A-6, A-7	0	0	100	95-100	85-100	65-95	30-55	12-35
AkeB2: Arney-----	0-9	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	90-100	22-40	NP-17
	9-36	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	90-100	23-50	2-29
	36-60	Silt loam-----	CL, ML	A-4, A-6	0	0	100	100	90-100	80-95	23-40	8-24
	60-80	Silt loam, loam, clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0-1	95-100	90-100	80-100	60-75	25-48	5-27
AloB2: Ava-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	90-100	22-40	NP-17
	8-27	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	25-45	10-20
	27-59	Silty clay loam, loam, silt loam.	CL, CL-ML	A-4, A-6, A-7	0	0	100	95-100	80-100	60-90	20-45	5-20
	59-80	Loam, clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0-1	95-100	95-100	80-100	60-80	25-40	5-20
AmkA: Ayrshire-----	0-8	Fine sandy loam.	SC, SC-SM, SM	A-2-4, A-4	0	0	100	98-100	80-100	25-50	15-25	NP-10
	8-14	Fine sandy loam, sandy loam, loam.	CL, ML, SC, SM	A-2-4, A-4, A-6	0	0	100	98-100	70-100	15-80	20-36	NP-15
	14-35	Loam, sandy clay loam, clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	100	98-100	80-100	35-80	20-40	5-24
	35-55	Fine sandy loam, sandy loam.	CL, ML, SC, SM	A-2-4, A-4	0	0	100	98-100	65-85	25-55	15-25	NP-10
	55-60	Fine sand, fine sandy loam.	ML, SM	A-2-4, A-4	0	0	100	98-100	65-85	20-55	0-15	NP-3

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches						
							4	10	40	200		
	In				Pct	Pct					Pct	
BdxAV:												
Belknap-----	0-13	Silt loam-----	CL, CL-ML, ML	A-4	0	0	100	95-100	90-100	75-90	20-30	2-8
	13-47	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	90-100	75-90	20-35	NP-12
	47-60	Silt loam, loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	95-100	80-100	60-90	20-34	3-12
BgeAH:												
Birds-----	0-8	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	80-100	24-34	5-12
	8-43	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	80-100	24-34	5-12
	43-60	Silt loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	95-100	75-100	55-90	20-34	5-12
BodAV:												
Bonnie-----	0-9	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	85-100	26-38	5-12
	9-47	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	85-100	27-38	5-12
	47-60	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	80-100	25-40	5-15
CkkB2:												
Cincinnati-----	0-8	Silt loam-----	CL, ML	A-4, A-6	0	0	100	95-100	90-100	80-100	23-40	3-15
	8-29	Silty clay loam, silt loam.	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-100	24-45	5-25
	29-52	Clay loam, loam, silt loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	95-100	90-100	80-95	55-85	24-40	8-24
	52-80	Clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0-2	90-100	85-95	70-95	55-80	25-50	5-27
CkkC2:												
Cincinnati-----	0-8	Silt loam-----	CL, ML	A-4, A-6	0	0	100	95-100	90-100	80-100	23-40	3-15
	8-25	Silty clay loam, silt loam.	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-100	24-45	5-25
	25-47	Clay loam, loam, silt loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	95-100	90-100	80-95	55-85	24-40	8-24
	47-80	Clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0-2	90-100	85-95	70-95	55-80	25-50	5-27
CkkC3:												
Cincinnati-----	0-8	Silt loam-----	CL, ML	A-4, A-6	0	0	100	95-100	90-100	80-100	23-40	3-15
	8-18	Silty clay loam, silt loam.	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-100	24-45	5-25
	18-46	Clay loam, loam, silt loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	95-100	90-100	80-95	55-85	24-40	5-24
	46-80	Clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0-2	90-100	85-95	70-95	55-80	25-50	5-27
CkkD2:												
Cincinnati-----	0-6	Silt loam-----	CL, ML	A-4, A-6	0	0	100	95-100	90-100	80-100	23-40	3-15
	6-24	Silty clay loam, silt loam.	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-100	24-45	5-25
	24-32	Clay loam, loam, silt loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	95-100	90-100	80-95	55-85	24-40	5-24
	32-80	Clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0-2	90-100	85-95	70-95	55-80	25-50	5-27

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
CkkD3:												
Cincinnati-----	0-6	Silt loam-----	CL, ML	A-4, A-6	0	0	100	95-100	90-100	80-100	23-40	3-15
	6-14	Silty clay loam, silt loam.	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-100	24-45	5-25
	14-29	Clay loam, loam, silt loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	95-100	90-100	80-95	55-85	24-40	8-24
	29-80	Clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0-2	90-100	85-95	70-95	55-80	25-50	5-27
CspC2:												
Crider-----	0-7	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	1-17
	7-43	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	23-50	3-29
	43-80	Silty clay, clay.	CH, CL	A-7	0-2	0-5	85-100	75-100	70-100	70-100	44-75	20-46
CspC3:												
Crider-----	0-7	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	1-17
	7-30	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	23-50	3-29
	30-66	Silty clay, clay.	CH, CL	A-7	0-2	0-5	85-100	75-100	70-100	70-100	44-75	20-46
DfnA:												
Dubois-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	75-95	22-40	NP-17
	8-18	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	75-95	23-40	2-15
	18-30	Silty clay loam, silt loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	90-100	85-100	24-50	4-30
	30-65	Silt loam, silty clay. loam.	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-95	20-40	7-25
	65-80	Silt loam, clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	98-100	95-100	80-100	55-90	20-50	6-25
EaaD2:												
Ebal-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0-2	80-100	80-100	75-100	60-95	23-40	1-17
	8-13	Channery silt loam, very channery loam, silty clay loam.	CL, GC, SC	A-2, A-6, A-7-6	0-2	0-15	50-100	45-95	35-95	30-90	30-48	12-25
	13-21	Channery silty clay, very channery clay, silty clay.	CH, CL, GC	A-7-6	0-2	3-15	50-100	45-95	40-95	35-90	40-55	20-30
	21-61	Clay, silty clay.	CH, CL	A-7-6	0-2	0-3	95-100	90-100	85-100	80-95	48-70	25-45
	61-80	Weathered bedrock.	---	---	0	0	0	0	0	0	---	NP

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches						
							4	10	40	200		
	In				Pct	Pct					Pct	
GaaE2:												
Gallimore-----	0-4	Loam-----	CL, CL-ML, ML	A-4, A-6	0	0	95-100	85-100	75-85	50-65	15-38	2-14
	4-35	Sandy loam, loam.	CL, ML, SC, SM	A-4, A-2-4, A-4	0	0	95-100	85-100	50-85	30-55	10-30	NP-15
	35-48	Sandy loam, fine sandy loam.	CL-ML, ML, SC, SM	A-1-B, A-2-4, A-4	0	0	95-100	85-100	30-80	15-60	5-26	NP-10
	48-80	Sandy loam, loamy sand, gravelly sand.	SC-SM, SM, SP, SP-SM	A-1-B, A-2-4, A-3	0	0	80-100	60-100	10-60	0-30	0-15	NP-4
GabG:												
Gallimore-----	0-9	Loam-----	CL, CL-ML, ML	A-4, A-6	0	0	95-100	85-100	75-85	50-65	15-38	2-14
	9-29	Loam, sandy loam.	CL, ML, SC, SM	A-2-4, A-4, A-6	0	0	95-100	85-100	50-85	30-55	10-30	NP-15
	29-54	Sandy loam, fine sandy loam.	CL-ML, ML, SC, SM	A-1-B, A-2-4, A-4	0	0	95-100	85-100	30-80	15-60	5-26	NP-10
	54-80	Sandy loam, loamy sand, gravelly sand.	SC-SM, SM, SP, SP-SM	A-1-B, A-2-4, A-3	0	0	80-100	60-100	10-60	0-30	0-15	NP-4
Chetwynd-----												
	0-12	Loam, silt loam.	CL, ML, CL-ML	A-4, A-6	0	0	90-100	85-100	75-95	60-75	21-40	NP-19
	12-39	Loam, sandy clay loam, clay loam.	CL, ML, SC, SM	A-2, A-4, A-6, A-7-6	0	0	80-100	75-100	45-90	20-75	23-50	2-29
	39-56	Coarse sandy loam, loam, gravelly sandy clay loam.	CL, ML, SC, SM	A-2-4, A-2-6, A-4	0	0	75-100	60-100	25-90	15-55	14-40	NP-18
	56-80	Gravelly sand, sandy loam, loamy sand.	SC-SM, SM, SP, SP-SM	A-1-B, A-2-4, A-3	0	0	75-100	60-100	40-70	0-35	0-25	NP-8
GblAH:												
Gessie-----	0-10	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	90-100	55-100	20-40	3-15
	10-43	Silt loam, loam.	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	90-100	55-100	20-40	3-15
	43-60	Stratified silt loam to sand.	CL, ML, SC, SM	A-2-4, A-4, A-6	0	0	100	85-100	65-100	15-100	0-40	NP-15
GmcD3:												
Grayford-----	0-6	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	90-100	90-100	80-100	65-100	22-40	NP-17
	6-23	Silty clay loam, silt loam.	CL	A-4, A-6, A-7-6	0	0	90-100	90-100	80-100	65-100	24-50	8-29
	23-35	Clay loam, silty clay loam, loam.	CL	A-4, A-6, A-7-6	0-1	0-5	90-100	85-100	70-95	50-85	24-50	8-28
	35-51	Clay, silty clay.	CH, CL, MH	A-7-6	0-10	0-15	60-98	60-95	55-95	55-90	44-75	17-48
	51-60	Unweathered bedrock.	---	---	0	0	0	0	0	0	---	NP

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
GmcE2:												
Grayford-----	0-5	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	90-100	90-100	80-100	65-100	22-40	NP-17
	5-10	Silty clay loam, silt loam.	CL	A-4, A-6, A-7-6	0	0	90-100	90-100	80-100	65-100	24-50	8-29
	10-36	Clay loam, silty clay loam, loam.	CL	A-4, A-6, A-7-6	0-1	0-5	90-100	85-100	70-95	50-85	24-50	8-28
	36-51	Clay, silty clay.	CH, CL, MH	A-7-6	0-10	0-15	60-98	60-95	55-95	55-90	44-75	17-48
	51-60	Unweathered bedrock.	---	---	0	0	0	0	0	0	---	NP
GmhD2:												
Grayford-----	0-7	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	90-100	90-100	80-100	65-100	22-40	NP-17
	7-27	Silty clay loam, silt loam.	CL	A-4, A-6, A-7-6	0	0	90-100	90-100	80-100	65-100	24-50	8-29
	27-36	Clay loam, silty clay loam, loam.	CL	A-4, A-6, A-7-6	0-1	0-5	90-100	85-100	70-95	50-85	24-50	8-28
	36-57	Clay, silty clay.	CH, CL, MH	A-7-6	0-10	0-15	60-98	60-95	55-95	55-90	44-75	17-48
	57-60	Unweathered bedrock.	---	---	0	0	0	0	0	0	---	NP
Ryker-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-95	22-40	NP-17
	8-28	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	90-100	75-95	23-48	3-28
	28-53	Silty clay loam, clay loam, loam.	CL	A-4, A-6, A-7	0	0	85-100	80-100	70-95	55-90	24-48	8-27
	53-67	Silty clay, clay.	CH, CL	A-7	0-2	0-5	80-100	80-100	75-100	70-95	44-75	19-48
	67-80	Unweathered bedrock.	---	---	0	0	0	0	0	0	---	NP
GmpE2:												
Greybrook-----	0-7	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	85-95	23-40	3-15
	7-18	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	85-95	23-40	3-15
	18-59	Silt loam, loam, clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	95-100	85-95	55-85	24-50	5-25
	59-80	Stratified silt loam to clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	95-100	90-100	55-90	22-50	3-25
GmpF:												
Greybrook-----	0-5	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	85-95	23-40	3-15
	5-15	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	85-95	23-40	3-15
	15-62	Silt loam, loam, clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	95-100	85-95	55-85	24-50	5-25
	62-80	Stratified silt loam to clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	95-100	90-100	55-90	22-50	3-25

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
HarD2:												
Haggatt-----	0-5	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	90-100	85-100	80-100	60-100	22-40	NP-17
	5-16	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	80-100	75-100	70-100	60-100	24-50	4-30
	16-44	Silty clay, clay.	CH, CL, MH	A-7-6	0-1	0-5	85-100	85-100	75-95	70-95	44-75	17-46
	44-60	Unweathered bedrock.	---	---	0	0	0	0	0	0	---	NP
HarD3:												
Haggatt-----	0-4	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	90-100	85-100	80-100	60-100	22-40	NP-17
	4-16	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	80-100	75-100	70-100	60-100	24-50	4-30
	16-44	Silty clay, clay.	CH, CL, MH	A-7-6	0-1	0-5	85-100	85-100	75-95	70-95	44-75	17-46
	44-60	Unweathered bedrock.	---	---	0	0	0	0	0	0	---	NP
HasE2:												
Haggatt-----	0-5	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	90-100	85-100	80-100	60-100	22-40	NP-17
	5-16	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	80-100	75-100	70-100	60-100	24-50	4-30
	16-44	Silty clay, clay.	CH, CL, MH	A-7-6	0-1	0-5	85-100	85-100	75-95	70-95	44-75	17-46
	44-60	Unweathered bedrock.	---	---	0	0	0	0	0	0	---	NP
Caneyville-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0-3	95-100	95-100	90-100	80-100	20-40	2-17
	8-14	Silty clay loam, silt loam.	CL, CL-ML	A-6, A-7-6	0	0-3	95-100	95-100	90-100	85-100	30-50	11-29
	14-33	Clay, silty clay.	CH, CL	A-7	0-2	0-15	90-100	85-100	85-100	80-100	44-75	20-45
	33-40	Unweathered bedrock.	---	---	0	0	0	0	0	0	---	NP
HccA:												
Haubstadt-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-100	22-40	2-16
	8-34	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	90-100	80-100	23-45	2-19
	34-61	Loam, silt loam, silty clay loam.	CL	A-4, A-6	0	0	90-100	90-100	80-100	60-95	20-40	7-25
	61-80	Clay loam, loam, silt loam.	CL, CL-ML	A-4, A-6	0	0	98-100	95-100	80-100	55-95	20-40	4-20
HccB2:												
Haubstadt-----	0-7	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-100	22-40	2-16
	7-32	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	90-100	80-100	23-45	2-19
	32-61	Loam, silt loam, silty clay loam.	CL	A-4, A-6	0	0	90-100	90-100	80-100	60-95	20-40	7-25
	61-80	Clay loam, loam, silt loam.	CL, CL-ML	A-4, A-6	0	0	98-100	95-100	80-100	55-90	20-40	4-20

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
HccC3:												
Haubstadt-----	0-7	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-100	22-40	2-16
	7-18	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	90-100	80-100	23-45	2-19
	18-42	Loam, silt loam, silty clay loam.	CL	A-4, A-6	0	0	90-100	90-100	80-100	60-95	20-40	7-25
	42-80	Clay loam, loam, silt loam.	CL, CL-ML, GC, SC	A-4, A-6	0	0	98-100	95-100	80-100	55-90	20-40	4-20
HcgAH:												
Haymond-----	0-10	Silt loam-----	CL, CL-ML, ML	A-4	0	0	100	100	90-100	85-100	20-30	3-10
	10-44	Silt loam-----	CL, CL-ML, ML	A-4	0	0	100	100	90-100	80-100	20-30	3-10
	44-60	Fine sandy loam, silt loam, loam.	CL, ML, SC, SM	A-4, A-6	0	0	95-100	90-100	65-100	35-90	15-35	2-15
HchA:												
Haymond-----	0-7	Silt loam-----	CL, CL-ML, ML	A-4	0	0	100	100	90-100	85-100	20-30	3-10
	7-33	Silt loam-----	CL, CL-ML, ML	A-4	0	0	100	100	90-100	80-100	20-30	3-10
	33-60	Silt loam, loam, fine sandy loam.	CL, ML, SC, SM	A-4, A-6	0	0	95-100	90-100	65-100	35-90	15-35	2-15
HefG:												
Hickory-----	0-6	Loam-----	CL, CL-ML, ML	A-4, A-6	0	0-5	95-100	90-100	75-95	55-75	20-35	3-15
	6-35	Clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0-1	0-5	90-100	85-100	70-95	50-90	20-50	5-30
	35-45	Loam, clay loam.	CL, CL-ML	A-4, A-6	0-1	0-5	85-100	80-95	65-95	50-75	20-40	5-20
	45-80	Loam-----	CL, CL-ML	A-4, A-6	0-1	0-5	85-100	80-95	65-95	50-75	20-40	5-20
Held2:												
Hickory-----	0-6	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0-1	98-100	95-100	85-100	65-90	20-35	3-15
	6-70	Clay loam, loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0-1	0-5	90-100	85-100	70-95	50-90	20-50	5-30
	70-80	Loam, clay loam, channery clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6	0-1	0-10	65-95	60-90	50-85	35-90	20-40	5-20
Stinesville----	0-7	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	NP-17
	7-46	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	24-50	3-29
	46-75	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-90	23-40	2-17
	75-80	Clay loam-----	CH, CL	A-6, A-7-6	0	0-1	90-100	85-99	75-95	60-80	25-42	10-27
HeoE:												
Hickory-----	0-11	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0-1	98-100	95-100	85-100	65-90	20-35	3-15
	11-70	Clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0-1	0-5	90-100	85-100	70-95	50-90	20-50	5-30
	70-80	Loam, clay loam.	CL, CL-ML	A-4, A-6	0-1	0-5	85-100	80-95	65-95	50-75	20-40	5-20

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
HeoE3:												
Hickory-----	0-4	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0-1	98-100	95-100	85-100	65-90	20-35	3-15
	4-55	Clay loam, loam, silt loam.	CL, CL-ML	A-4, A-6, A-7-6	0-1	0-5	90-100	85-100	70-95	50-90	20-50	5-30
	55-80	Loam, clay loam.	CL, CL-ML	A-4, A-6	0-1	0-5	85-100	80-95	65-95	50-75	20-40	5-20
HeoG:												
Hickory-----	0-9	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0-1	98-100	95-100	85-100	65-90	20-35	3-15
	9-70	Clay loam, loam, silt loam.	CL, CL-ML	A-4, A-6, A-7-6	0-1	0-5	90-100	85-100	70-95	50-90	20-50	5-30
	70-80	Loam, clay loam.	CL, CL-ML	A-4, A-6	0-1	0-5	85-100	80-95	65-95	50-75	20-40	5-20
HepG:												
Hickory-----	0-9	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0-1	98-100	95-100	85-100	65-90	20-35	3-15
	9-59	Clay loam, loam, silt loam.	CL, CL-ML	A-4, A-6, A-7-6	0-1	0-5	90-100	85-100	70-95	50-90	20-50	5-30
	59-80	Loam, channery clay loam, clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6	0-1	0-10	65-95	60-90	50-85	35-90	20-40	5-20
Adyeville-----	0-4	Loam-----	CL-ML, ML	A-4	0	0-2	90-100	90-100	75-100	55-90	12-25	1-7
	4-25	Loam, channery fine sandy loam, silt loam.	CL-ML, GM, ML, SM	A-1-B, A-2-4, A-4	0-2	0-10	60-100	50-95	35-90	20-70	12-25	1-7
	25-60	Weathered bedrock.	---	---	0	0	0	0	0	0	---	NP
HesG:												
Hickory-----	0-6	Loam-----	CL, CL-ML, ML	A-4, A-6	0	0-5	95-100	90-100	75-95	55-75	20-35	3-15
	6-35	Clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0-1	0-5	90-100	85-100	70-95	50-90	20-50	5-30
	35-45	Loam, clay loam	CL, CL-ML	A-2, A-4, A-6	0-1	0-5	85-100	80-95	50-65	65-75	20-40	5-20
	45-80	Loam-----	CL, CL-ML	A-4, A-6	0-1	0-5	85-100	80-95	65-95	50-75	20-40	5-20
Chetwynd-----	0-10	Loam-----	CL, ML, CL-ML	A-4, A-6	0	0	90-100	85-100	70-95	50-75	21-40	NP-19
	10-35	Loam, sandy clay loam, clay loam.	CL, ML, SC, SM	A-2, A-4, A-6, A-7-6	0	0	80-100	75-100	45-90	20-75	23-50	2-29
	35-58	Coarse sandy loam, loam, gravelly sandy clay loam.	CL, ML, SC, SM	A-2-4, A-2-6, A-4	0	0	75-100	60-100	25-90	15-55	14-40	NP-18
	58-80	Gravelly sand, sandy loam, loamy sand.	SC-SM, SM, SP, SP-SM	A-1-B, A-2-4, A-3	0	0	75-100	60-100	40-70	0-35	0-25	NP-8
HeuE:												
Hickory-----	0-9	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0-1	98-100	95-100	85-100	65-90	20-35	3-15
	9-68	Clay loam, loam, silt loam.	CL, CL-ML	A-4, A-6, A-7-6	0-1	0-5	90-100	85-100	70-95	50-90	20-50	5-30
	68-80	Loam, clay loam.	CL, CL-ML	A-4, A-6	0-1	0-5	85-100	80-95	65-95	50-75	20-40	5-20

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
HeuE:												
Wellston-----	0-4	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	98-100	95-100	90-100	75-95	22-40	3-17
	4-28	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	98-100	95-100	90-100	75-95	23-48	3-27
	28-44	Silt loam, clay loam, channery loam.	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-10	70-98	65-95	55-90	40-70	20-35	5-15
	44-52	Very channery loam, channery clay loam, very channery sandy loam.	CL, GC-GM, SC, SC-SM	A-1-B, A-2, A-4, A-6	0-5	0-30	60-80	45-75	30-70	15-55	20-35	5-15
	52-60	Weathered bedrock.	---	---	0	0	0	0	0	0	---	NP
HeuF:												
Hickory-----	0-9	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0-1	98-100	95-100	85-100	65-90	20-35	3-15
	9-60	Clay loam, loam, silt loam.	CL, CL-ML	A-6, A-7	0-1	0-5	90-100	85-100	70-95	50-90	20-50	5-30
	60-80	Loam, clay loam.	CL, CL-ML	A-4, A-6	0-1	0-5	85-100	80-95	65-95	50-75	20-40	5-20
Wellston-----	0-3	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	98-100	95-100	90-100	75-95	22-40	3-17
	3-22	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	98-100	95-100	90-100	75-95	23-48	3-27
	22-32	Silt loam, clay loam, channery loam.	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-10	70-98	65-95	55-90	40-70	20-35	5-15
	32-41	Very channery loam, channery clay loam, very channery sandy loam.	CL, GC-GM, SC, SC-SM	A-1-B, A-2, A-4, A-6	0-5	0-30	60-80	45-75	30-70	15-55	20-35	5-15
	41-60	Weathered bedrock.	---	---	0	0	0	0	0	0	---	NP
HkaB:												
Hollybrook-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0-1	95-100	95-100	85-100	65-90	23-40	3-17
	8-23	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0-1	0-3	90-100	90-100	80-100	60-90	25-50	5-30
	23-54	Silt loam, silty clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0-1	1-5	90-100	90-100	75-100	55-90	25-50	5-30
	54-80	Silty clay loam, loam, silt loam.	CL, ML	A-6, A-7-6	0-5	2-10	80-95	80-95	70-95	50-90	30-50	8-25
HleAV:												
Holton-----	0-14	Silt loam, loam.	CL, CL-ML, ML	A-4	0	0	100	100	85-100	60-90	14-28	2-10
	14-41	Silt loam, loam, sandy loam.	CL, ML, SC, SM	A-2-4, A-4	0	0	90-100	85-100	50-100	30-90	14-28	2-10
	41-60	Loam, fine sandy loam, loamy sand.	CL, ML, SC, SM	A-2-4, A-2-6, A-4, A-6	0	0-5	80-100	75-100	45-95	20-75	14-36	2-15

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
HnoA:												
Hoosierville----	0-13	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-90	22-40	NP-17
	13-40	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	90-100	80-95	23-50	3-30
	40-72	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-90	23-40	2-17
	72-80	Clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	95-100	95-100	80-95	60-75	24-44	5-20
Lnfa:												
Lieber-----	0-9	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	NP-17
	9-19	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	NP-17
	19-34	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	23-50	3-30
	34-57	Silt loam, silty clay loam.	CL	A-4, A-6, A-7-6	0	0	100	100	90-100	70-90	26-44	8-25
	57-80	Silt loam, clay loam, loam.	CL	A-4, A-6, A-7-6	0	0	95-99	95-98	80-95	55-80	24-42	8-26
Lnfb:												
Lieber-----	0-9	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	NP-17
	9-19	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	NP-17
	19-34	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	23-50	3-30
	34-57	Silt loam, silty clay loam.	CL	A-4, A-6, A-7-6	0	0	100	100	90-100	70-90	26-44	8-25
	57-80	Silt loam, clay loam, loam.	CL	A-4, A-6, A-7-6	0	0	95-99	95-98	80-95	55-80	24-42	8-26
MecA:												
Martinsville----	0-8	Loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	80-95	55-75	23-40	3-20
	8-17	Clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	98-100	90-100	75-100	55-80	20-50	5-35
	17-35	Clay loam, loam, sandy clay loam.	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6, A-7-6	0	0	98-100	90-100	70-100	30-75	20-50	5-30
	35-53	Loam, sandy clay loam, sandy loam.	CL-ML, SC, SC-SM, SM	A-2-4, A-2-6, A-4, A-6	0	0	98-100	90-100	50-95	25-70	10-40	NP-20
	53-60	Stratified silt loam to sand.	CL, ML, SC, SM	A-1-B, A-2-4, A-4	0	0	95-100	85-100	40-95	20-75	0-30	NP-10
MecAQ:												
Martinsville----	0-9	Loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	80-95	55-75	22-40	3-20
	9-17	Clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	98-100	90-100	75-100	55-80	20-50	5-35
	17-58	Clay loam, sandy clay loam, sandy loam.	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6, A-7-6	0	0	98-100	90-100	50-100	25-70	10-50	NP-30
	58-80	Stratified silt loam to sand.	CL, ML, SC, SM	A-1-B, A-2-4, A-4	0	0	95-100	85-100	40-95	20-75	0-30	NP-10

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	sieve number--					
							4	10	40	200		
	In				Pct	Pct					Pct	
MecB:												
Martinsville----	0-8	Loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	80-95	55-75	23-40	3-20
	8-17	Clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	98-100	90-100	75-100	55-80	20-50	5-35
	17-35	Clay loam, loam, sandy clay loam.	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6, A-7-6	0	0	98-100	90-100	70-100	30-75	20-50	5-30
	35-53	Loam, sandy clay loam, sandy loam.	CL-ML, SC, SC-SM, SM	A-2-4, A-2-6, A-4, A-6	0	0	98-100	90-100	50-95	25-70	10-40	NP-20
	53-60	Stratified silt loam to sand.	CL, ML, SC, SM	A-1-B, A-2-4, A-4	0	0	95-100	85-100	40-95	20-75	0-30	NP-10
MhhAH:												
McAdoo-----	0-10	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	70-90	22-39	2-15
	10-48	Silt loam, silty clay loam.	CL, ML	A-4, A-6, A-7-6	0	0	100	100	90-100	70-95	26-50	2-24
	48-60	Silt loam, loam.	CL, CL-ML, ML	A-4, A-6	0	0	100	100	85-100	60-90	22-39	2-15
MhhAK:												
McAdoo-----	0-10	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	70-90	22-39	2-15
	10-48	Silt loam, silty clay loam.	CL, ML	A-4, A-6, A-7-6	0	0	100	100	90-100	70-95	26-50	2-24
	48-60	Silt loam, loam.	CL, CL-ML, ML	A-4, A-6	0	0	100	100	85-100	60-90	22-39	2-15
MhuA:												
McGary-----	0-11	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-20
	11-42	Silty clay, silty clay loam.	CH, CL	A-7-6	0	0	100	100	95-100	90-100	45-60	20-34
	42-50	Silty clay, silty clay loam.	CH, CL	A-7-6	0	0	100	100	95-100	90-100	45-60	20-34
	50-60	Silty clay, silty clay loam.	CH, CL	A-6, A-7-6	0	0	100	100	95-100	90-100	38-60	15-34
MrcG:												
Minnehaha-----	0-3	Silty clay loam.	CL, ML	A-6, A-7	0-1	0-10	85-100	85-100	80-100	70-95	24-50	8-27
	3-60	Very parachannery silty clay loam, very parachannery loam, channery loam.	CL	A-4, A-6, A-7	0-5	0-15	85-100	75-95	65-95	50-90	24-50	8-27
MsvA:												
Montgomery-----	0-15	Silty clay loam, silty clay.	CL	A-7-6	0	0	100	100	100	85-100	40-50	20-30
	15-24	Silty clay	CH	A-7-6	0	0	100	100	95-100	90-100	50-65	30-42
	24-48	Silty clay, silty clay loam.	CH	A-7-6	0	0	100	100	90-100	85-100	50-65	30-42
	48-60	Silty clay loam, silty clay.	CH, CL	A-6, A-7-6	0	0	100	100	90-100	85-100	30-55	10-32

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
MvrAH:												
Moundhaven-----	0-14	Loamy fine sand	SM	A-2-4	0	0	100	95-100	50-75	15-30	0-20	NP-4
	14-60	Loamy sand, sand, loamy fine sand.	SM, SP, SP-SM	A-1-B, A-2-4, A-3	0	0	100	95-100	45-75	3-30	0-20	NP
NbhAH:												
Newark-----	0-11	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-100	25-40	NP-15
	11-32	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	90-100	80-100	22-50	3-25
	32-60	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	90-100	75-100	22-50	3-25
OfaAV:												
Oldenburg-----	0-9	Silt loam-----	CL, CL-ML, ML	A-4	0	0	98-100	95-100	85-100	65-90	18-30	3-10
	9-39	Silt loam, loam, sandy loam.	CL, ML, SC, SM	A-2-4, A-4	0	0	95-100	85-100	50-90	25-70	15-30	2-10
	39-60	Loam, sandy loam, loamy sand.	CL-ML, ML, SC-SM, SM	A-1-B, A-2-4, A-4	0	0	85-100	75-100	45-90	20-65	0-24	NP-7
OfcAV:												
Oldenburg-----	0-10	Fine sandy loam.	ML, SC, SM	A-4	0	0	100	100	70-85	40-55	14-24	NP-10
	10-36	Fine sandy loam, sandy loam.	ML, SC, SM	A-2-4, A-4	0	0	100	100	60-85	30-55	14-24	NP-10
	36-60	Loamy fine sand, loamy sand.	SM	A-2-4	0	0	100	100	50-80	15-35	0-15	NP-3
OfeB:												
Olephant-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	NP-17
	8-30	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	90-100	24-50	4-30
	30-64	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	90-100	24-50	4-30
	64-80	Clay loam, loam, silty clay loam.	CH, CL, CL-ML	A-4, A-6, A-7-6	0	0	100	95-100	85-100	55-85	23-55	4-35
OmkC2:												
Otwell-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-100	22-35	3-15
	8-23	Silty clay loam, silt loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	90-100	80-100	25-50	5-28
	23-48	Silty clay loam, clay loam, silt loam.	CL	A-4, A-6, A-7-6	0	0	95-100	95-100	85-100	65-95	24-50	8-25
	48-80	Silt loam, clay loam, sandy clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7-6	0	0	95-100	90-100	75-100	35-95	25-50	5-25

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
OmK3:												
Otwell-----	0-8	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	80-100	25-35	5-15
	8-17	Silty clay loam, silt loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	90-100	80-100	25-50	5-28
	17-42	Silty clay loam, clay loam, silt loam.	CL	A-4, A-6, A-7-6	0	0	95-100	95-100	85-100	65-95	24-50	8-25
	42-80	Silt loam, clay loam, sandy clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7-6	0	0	95-100	90-100	75-100	35-95	25-50	5-25
OmK3:												
Otwell-----	0-4	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	80-100	25-35	5-15
	4-17	Silty clay loam, silt loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	90-100	80-100	25-50	5-28
	17-32	Silty clay loam, clay loam, silt loam.	CL	A-4, A-6, A-7-6	0	0	95-100	95-100	85-100	65-95	24-50	8-25
	32-80	Silt loam, clay loam, sandy clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7-6	0	0	95-100	90-100	75-100	35-95	25-50	5-25
PbbC2:												
Parke-----	0-6	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	90-100	22-40	NP-17
	6-26	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	90-100	90-100	24-50	5-31
	26-35	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	90-95	70-80	24-40	5-18
	35-80	Sandy loam, loam, sandy clay loam.	CL, ML, SC, SM	A-2, A-4, A-6	0	0	90-100	85-100	35-85	25-70	14-40	NP-18
PbbC3:												
Parke-----	0-6	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	90-100	22-40	NP-17
	6-22	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	90-100	90-100	24-50	5-31
	22-30	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	90-95	70-80	24-40	5-18
	30-80	Sandy loam, loam, sandy clay loam.	CL, ML, SC, SM	A-2, A-4, A-6	0	0	90-100	85-100	35-85	25-70	14-40	NP-18
PbbD2:												
Parke-----	0-6	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	90-100	22-40	NP-17
	6-26	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	90-100	90-100	24-50	5-31
	26-35	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	90-95	70-80	24-40	5-18
	35-80	Sandy loam, loam, sandy clay loam.	CL, ML, SC, SM	A-2, A-4, A-6	0	0	90-100	85-100	35-85	25-70	14-40	NP-18

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
PbbD3: Parke-----	0-6	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	90-100	22-40	NP-17
	6-22	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	90-100	90-100	24-50	5-31
	22-30	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	90-95	70-80	24-40	5-18
	30-80	Sandy loam, loam, sandy clay loam.	CL, ML, SC, SM	A-2, A-4, A-6	0	0	90-100	85-100	35-85	25-70	14-40	NP-18
PcnA: Patrickburg----	0-11	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	NP-17
	11-25	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	25-50	6-30
	25-55	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	65-100	25-40	6-20
	55-76	Silt loam, sandy loam, channery clay loam.	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0-1	0-2	75-100	70-95	45-95	25-85	25-38	5-12
	76-80	Weathered bedrock.	---	---	0	0	0	0	0	0	---	NP
PcrAQ: Pekin-----	0-9	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	75-100	15-30	3-12
	9-27	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	75-100	24-38	5-18
	27-50	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	65-95	25-40	6-20
	50-60	Silt loam, silty clay loam, sandy loam.	CL, ML, SC, SM	A-2-4, A-2-6, A-4, A-6	0	0	90-100	85-100	50-100	25-95	15-38	3-18
PcrB2: Pekin-----	0-9	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	75-100	15-30	3-12
	9-27	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	75-100	24-38	5-18
	27-44	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	65-95	25-40	6-20
	44-60	Silt loam, silty clay loam, sandy loam.	CL, ML, SC, SM	A-2-4, A-2-6, A-4, A-6	0	0	90-100	85-100	50-100	25-95	15-38	3-18
PcrC2: Pekin-----	0-9	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	75-100	15-30	3-12
	9-27	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	75-100	24-38	5-18
	27-44	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	65-95	25-40	6-20
	44-60	Silt loam, silty clay loam, sandy loam.	CL, ML, SC, SM	A-2-4, A-2-6, A-4, A-6	0	0	90-100	85-100	50-100	25-95	15-38	3-18

Table 17.--Engineering Index Properties--Continued

[illegible]

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches						
							4	10	40	200		
	In				Pct	Pct					Pct	
PrwAV: Pope-----	0-8	Fine sandy loam, sandy loam.	CL-ML, ML, SC-SM, SM	A-4	0	0	98-100	95-100	65-85	40-55	0-20	NP-5
	8-32	Fine sandy loam, sandy loam, very fine sandy loam.	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	95-100	90-100	55-85	25-55	0-25	NP-7
	32-60	Sandy loam, loamy sand, loamy fine sand.	SC-SM, SM	A-1-B, A-2-4, A-4	0	0	90-100	85-100	45-70	15-40	0-25	NP-7
PryB: Potawatomi-----	0-9	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	NP-17
	9-28	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	90-100	23-50	3-29
	28-46	Silt loam, silty clay loam.	CL	A-4, A-6, A-7-6	0	0	100	100	95-100	90-100	26-44	8-24
	46-77	Silt loam, loam, clay loam.	CL	A-4, A-6, A-7-6	0	0	100	95-100	85-95	55-80	26-46	8-20
	77-90	Silt loam, channery clay loam, extremely channery sandy loam.	CL, ML, SC, SC-SM	A-2, A-4, A-6, A-7	0-1	0-2	15-100	10-98	5-90	5-80	17-44	3-25
PsaD3: Pottersville----	0-5	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	NP-17
	5-20	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	24-50	4-30
	20-44	Silty clay	CH, CL	A-7-6	0	0	100	100	95-100	85-100	44-62	19-37
	44-60	Stratified silty clay to silt loam.	CH, CL, ML	A-4, A-6, A-7-6	0	0	100	95-100	90-100	70-100	25-54	NP-29
PsaG: Pottersville----	0-7	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	NP-17
	7-24	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	24-50	4-30
	24-46	Silty clay	CH, CL	A-7-6	0	0	100	100	95-100	85-100	44-62	19-37
	46-60	Stratified silty clay to silt loam.	CH, CL, ML	A-4, A-6, A-7-6	0	0	100	95-100	90-100	70-100	25-54	NP-29
PsbF: Pottersville----	0-7	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	NP-17
	7-24	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	24-50	4-30
	24-46	Silty clay	CH, CL	A-7-6	0	0	100	100	95-100	85-100	44-62	19-37
	46-60	Stratified silty clay to silt loam.	CH, CL, ML	A-4, A-6, A-7-6	0	0	100	95-100	90-100	70-100	25-54	NP-29

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
Rnn: Riverwash.												
RpzG: Romona-----	0-6	Flaggy silty clay loam.	CL	A-6, A-7-6	0-15	7-45	90-100	85-100	80-100	80-95	30-50	10-25
	6-9	Silty clay loam, flaggy silty clay loam.	CL	A-6, A-7	0-15	7-45	90-100	85-100	80-100	80-95	30-50	10-25
	9-19	Silty clay, flaggy silty clay.	CH, CL	A-7	0-15	7-45	85-100	75-100	70-100	70-95	44-64	20-42
	19-27	Flaggy silty clay, extremely flaggy silty clay.	CH, CL	A-7	0-45	45-85	75-95	70-95	65-95	65-90	44-64	20-42
	27-37	Unweathered bedrock.	---	---	0	0	0	0	0	0	---	NP
Corydon-----	0-5	Flaggy silty clay loam.	CH, CL, ML	A-4, A-6, A-7-6	10-40	10-40	85-95	85-95	75-95	60-95	30-55	5-30
	5-17	Silty clay loam, clay, very flaggy silty clay.	CH, CL	A-7	0-30	0-40	85-95	85-95	80-95	70-95	40-75	20-46
	17-27	Unweathered bedrock.	---	---	0	0	0	0	0	0	---	NP
Rock outcrop.												
RtcC3: Ryker-----	0-6	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-95	22-40	NP-17
	6-38	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	90-100	75-95	23-48	3-28
	38-67	Silty clay loam, clay loam, loam.	CL	A-4, A-6, A-7	0	0	85-100	80-100	70-95	55-90	24-48	8-27
	67-80	Silty clay, clay.	CH, CL	A-7	0-2	0-5	80-100	80-100	75-100	70-95	44-75	19-48
SfoA: Shakamak-----	0-10	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-100	23-40	3-15
	10-28	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	25-50	5-30
	28-57	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	75-100	25-40	5-20
	57-80	Loam, silt loam, clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0-1	95-100	90-100	80-95	60-85	20-50	5-30

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
SfyB2:												
Shircliff-----	0-8	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-20
	8-19	Silty clay loam, silt loam.	CL	A-4, A-6, A-7-6	0	0	100	100	95-100	90-100	26-50	8-30
	19-43	Silty clay, silty clay loam.	CH, CL	A-7-6	0	0	100	100	95-100	90-100	45-65	20-40
	43-80	Silty clay, silty clay loam, silt loam.	CH, CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	90-100	16-55	5-30
SfyC2:												
Shircliff-----	0-6	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-20
	6-19	Silty clay loam, silt loam.	CL	A-4, A-6, A-7-6	0	0	100	100	95-100	90-100	26-50	8-30
	19-43	Silty clay, silty clay loam.	CH, CL	A-7-6	0	0	100	100	95-100	90-100	45-65	20-40
	43-80	Silty clay, silty clay loam, silt loam.	CH, CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	90-100	16-55	5-30
SneC2:												
Solsberry-----	0-7	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-100	23-40	3-15
	7-21	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	25-50	5-30
	21-27	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	22-50	4-30
	27-39	Silt loam, loam, clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0-1	90-100	85-98	70-95	50-70	25-50	5-30
	39-80	Clay, clay loam, channery loam.	CH, CL, CL-ML, SC	A-2, A-4, A-6, A-7-6	0-2	0-5	55-98	50-95	40-95	30-90	20-55	5-32
SneC3:												
Solsberry-----	0-6	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-100	23-40	3-15
	6-17	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	25-50	5-30
	17-23	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	22-50	4-30
	23-39	Silt loam, loam, clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0-1	90-100	85-98	70-95	50-70	25-50	5-30
	39-80	Clay, clay loam, channery loam.	CH, CL, CL-ML, SC	A-2, A-4, A-6, A-7-6	0-2	0-5	55-98	50-95	40-95	30-90	20-55	5-32

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches						
							4	10	40	200		
	In				Pct	Pct					Pct	
SneD2: Solsberry-----	0-7	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-100	23-40	3-15
	7-21	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	25-50	5-30
	21-27	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	22-50	4-30
	27-39	Silt loam, loam, clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0-1	90-100	85-98	70-95	50-70	25-50	5-30
	39-80	Clay, clay loam, channery loam.	CH, CL, CL-ML, SC	A-2, A-4, A-6, A-7-6	0-2	0-5	55-98	50-95	40-95	30-90	20-55	5-32
SneD3: Solsberry-----	0-6	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-100	23-40	3-15
	6-17	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	25-50	5-30
	17-23	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	22-50	4-30
	23-39	Silt loam, loam, clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0-1	90-100	85-98	70-95	50-70	25-50	5-30
	39-80	Clay, clay loam, channery loam.	CH, CL, CL-ML, SC	A-2, A-4, A-6, A-7-6	0-2	0-5	55-98	50-95	40-95	30-90	20-55	5-32
SneD5: Solsberry-----	0-2	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-100	23-40	3-15
	2-9	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	25-50	5-30
	9-18	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	22-50	4-30
	18-42	Silt loam, loam, clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0-1	90-100	85-98	70-95	50-70	25-50	5-30
	42-80	Clay, clay loam, channery loam.	CH, CL, CL-ML, SC	A-2, A-4, A-6, A-7-6	0-2	0-5	55-98	50-95	40-95	30-90	20-55	5-32
StaAV: Steff-----	0-11	Silt loam-----	CL, CL-ML, ML	A-4	0	0	100	95-100	90-100	70-95	10-30	NP-10
	11-41	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	90-100	70-95	10-30	NP-10
	41-60	Silt loam, loam, fine sandy loam.	CL, ML, SC, SM	A-2-4, A-2-6, A-4, A-6	0	0	90-100	85-100	60-95	35-90	10-32	NP-12
StdAH: Stendal-----	0-8	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	25-38	5-15
	8-40	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	90-100	85-98	25-50	5-25
	40-60	Silt loam, silty clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	95-100	90-100	75-100	55-90	25-50	5-25

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches						
							4	10	40	200		
	In				Pct	Pct					Pct	
StfB2:												
Stinesville-----	0-9	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	NP-17
	9-46	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	24-50	3-29
	46-68	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-90	23-40	2-17
	68-92	Clay, clay loam, silty clay loam.	CH, CL	A-6, A-7-6	0	0-1	90-100	85-99	75-95	60-85	25-54	10-33
	92-99	Clay, silty clay.	CH, CL, MH	A-7-6	0	0-1	95-100	90-100	90-100	80-90	44-75	17-48
StfC2:												
Stinesville-----	0-9	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	NP-17
	9-33	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	24-50	3-29
	33-55	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-90	23-40	2-17
	55-83	Clay, clay loam, silty clay loam.	CH, CL	A-6, A-7-6	0	0-1	90-100	85-99	75-95	60-85	25-54	10-33
	83-99	Clay, silty clay.	CH, CL, MH	A-7-6	0	0-1	95-100	90-100	90-100	80-90	44-75	17-48
StgC2:												
Stinesville-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	NP-17
	8-38	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	24-50	3-29
	38-52	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-90	23-40	2-17
	52-83	Clay, clay loam, silty clay loam.	CH, CL	A-6, A-7-6	0	0-1	90-100	85-99	75-95	60-85	25-54	10-33
	83-99	Clay, silty clay.	CH, CL, MH	A-7-6	0	0-1	95-100	90-100	90-100	80-90	44-75	17-48
Ryker-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-95	22-40	NP-17
	8-38	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	90-100	75-95	23-48	3-28
	38-52	Silty clay loam, clay loam, loam.	CL	A-4, A-6, A-7	0	0	85-100	80-100	70-95	55-90	24-48	8-27
	52-80	Silty clay, clay.	CH, CL	A-7	0-2	0-5	80-100	80-100	75-100	70-95	44-75	19-48
Grayford-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	90-100	90-100	80-100	65-100	22-40	NP-17
	8-20	Silty clay loam, silt loam.	CL	A-4, A-6, A-7-6	0	0	90-100	90-100	80-100	65-100	24-50	8-29
	20-32	Clay loam, silty clay loam, loam.	CL	A-4, A-6, A-7-6	0-1	0-5	90-100	85-100	70-95	50-85	24-50	8-28
	32-49	Clay, silty clay.	CH, CL, MH	A-7-6	0-10	0-15	60-98	60-95	55-95	55-90	44-75	17-48
	49-59	Unweathered bedrock.	---	---	0	0	0	0	0	0	---	NP

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
StgD2: Stinesville-----	0-6	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	NP-17
	6-38	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	24-50	3-29
	38-52	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-90	23-40	2-17
	52-77	Clay, clay loam, silty clay loam.	CH, CL	A-6, A-7-6	0	0-1	90-100	85-99	75-95	60-85	25-54	10-33
	77-80	Clay, silty clay.	CH, CL, MH	A-7-6	0	0-1	95-100	90-100	90-100	80-90	44-75	17-48
Ryker-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	80-95	22-40	NP-17
	8-28	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	90-100	75-95	23-48	3-28
	28-53	Silty clay loam, clay loam, loam.	CL	A-4, A-6, A-7	0	0	85-100	80-100	70-95	55-90	24-48	8-27
	53-67	Silty clay, clay.	CH, CL	A-7	0-2	0-5	80-100	80-100	75-100	70-95	44-75	19-48
	67-80	Unweathered bedrock.	---	---	0	0	0	0	0	0	---	NP
Grayford-----	0-4	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	90-100	90-100	80-100	65-100	22-40	NP-17
	4-9	Silty clay loam, silt loam.	CL	A-4, A-6, A-7-6	0	0	90-100	90-100	80-100	65-100	24-50	8-29
	9-26	Clay loam, silty clay loam, loam.	CL	A-4, A-6, A-7-6	0-1	0-5	90-100	85-100	70-95	50-85	24-50	8-28
	26-45	Clay, silty clay.	CH, CL, MH	A-7-6	0-10	0-15	60-98	60-95	55-95	55-90	44-75	17-48
	45-60	Unweathered bedrock.	---	---	0	0	0	0	0	0	---	NP
SupAH: Stonelick-----	0-12	Sandy loam-----	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	90-100	80-100	50-70	25-40	0-24	NP-6
	12-70	Stratified loam to loamy sand.	CL-ML, ML, SC-SM, SM	A-1-B, A-2-4, A-4	0	0	90-100	80-100	40-90	12-70	0-24	NP-6
SwH: Stubenville-----	0-6	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	75-95	20-38	NP-16
	6-36	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	90-100	75-95	20-50	1-26
	36-60	Silt, silt loam.	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	80-100	20-38	NP-16
Hickory-----	0-6	Loam-----	CL, CL-ML, ML	A-4, A-6	0	0-5	95-100	90-100	75-95	55-75	20-35	3-15
	6-35	Clay loam, loam.	CL, CL-ML	A-4, A-6, A-7-6	0-1	0-5	90-100	85-100	70-95	50-90	20-50	5-30
	35-45	Loam, clay loam.	CL, CL-ML	A-4, A-6	0-1	0-5	85-100	80-95	65-95	50-75	20-40	5-20
	45-80	Loam-----	CL, CL-ML	A-4, A-6	0-1	0-5	85-100	80-95	65-95	50-75	20-40	5-20

[illegible]

Table 17.--Engineering Index Properties--Continued

[illegible]

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches						
							4	10	40	200		
	In				Pct	Pct					Pct	
VdgA:												
Vigo-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	80-90	22-40	NP-17
	8-22	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-90	23-40	NP-17
	22-46	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	24-50	3-29
	46-70	Silt loam-----	CL	A-4, A-6	0	0	100	95-100	90-95	70-85	24-40	8-24
	70-80	Loam, clay loam.	CL, CL-ML	A-4, A-6, A-7-6	0	0	90-100	85-98	80-95	50-70	19-42	4-27
W:												
Water.												
WeaA:												
Wea-----	0-15	Loam, sandy loam.	CL, CL-ML, ML	A-4, A-6	0	0	95-100	85-100	75-85	50-65	21-36	NP-14
	15-43	Loam, sandy clay loam, gravelly sandy loam.	CL, ML, SC, SM	A-2-4, A-2-6, A-4	0	0	85-100	55-95	35-85	20-65	22-40	NP-18
	43-80	Sand, gravelly sand, coarse sand.	SM, SP-SM	A-1-B, A-2-4, A-3	0	0-1	75-90	55-85	20-80	5-15	---	NP
Elston-----	0-20	Sandy loam-----	SC-SM, SM	A-2-4, A-4	0	0	98-100	95-100	75-90	25-40	15-25	NP-10
	20-34	Sandy loam-----	SC, SC-SM, SM	A-2-4, A-2-6, A-4	0	0	95-100	85-100	80-95	25-50	14-27	NP-13
	34-76	Loamy sand, coarse sandy loam, loamy coarse sand.	SC, SC-SM, SM, SP-SM	A-1-B, A-2-4, A-3	0	0-10	95-100	85-95	40-55	5-30	0-26	NP-13
	76-80	Sand, gravelly sand.	SM, SP, SP-SM	A-1-B, A-3	0	0	85-100	70-95	35-65	3-15	---	NP
WeaAQ:												
Wea-----	0-15	Loam-----	CL, CL-ML, ML	A-4, A-6	0	0	95-100	85-100	75-85	50-65	21-36	NP-14
	15-43	Loam, sandy clay loam, gravelly sandy loam.	CL, ML, SC, SM	A-2-4, A-2-6, A-4	0	0	85-100	55-95	35-85	20-65	22-40	NP-18
	43-80	Sand, gravelly sand, coarse sand.	SM, SP-SM	A-1-B, A-2-4, A-3	0	0-1	75-90	55-85	20-80	5-15	---	NP
Elston-----	0-20	Sandy loam-----	SC, SC-SM, SM	A-2-4, A-4	0	0	98-100	95-100	75-90	25-40	15-25	NP-10
	20-34	Sandy loam-----	SC, SC-SM, SM	A-2-4, A-2-6, A-4	0	0	95-100	85-100	80-95	25-50	14-27	NP-13
	34-76	Loamy sand, coarse sandy loam, loamy coarse sand.	SC, SC-SM, SM, SP-SM	A-1-B, A-2-4, A-3	0	0	95-100	85-95	40-55	5-30	0-26	NP-13
	76-80	Sand, gravelly sand.	SM, SP, SP-SM	A-1-B, A-3	0	0	85-100	70-95	35-65	3-15	---	NP

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
WhfD2:												
Wellston-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	98-100	95-100	90-100	75-95	22-40	3-17
	8-30	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	98-100	95-100	90-100	75-95	23-48	3-27
	30-45	Silt loam, clay loam, channery loam.	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-10	70-98	65-95	55-90	40-70	20-35	5-15
	45-49	Very channery loam, very channery sandy loam, channery clay loam.	CL, GC-GM, SC, SC-SM	A-1-B, A-2, A-4, A-6	0-5	0-30	60-80	45-75	30-70	15-55	20-35	5-15
	49-60	Weathered bedrock.	---	---	0	0	0	0	0	0	---	NP
WlmAK:												
Whitaker-----	0-16	Loam-----	CL-ML, ML	A-4	0	0	100	95-100	80-95	55-75	0-25	2-7
	16-50	Sandy loam, sandy clay loam, clay loam.	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	60-80	20-35	5-15
	50-80	Stratified coarse sand to sandy loam.	SC-SM, SM, SP-SM	A-1, A-2-4, A-4	0	0	95-100	95-100	40-60	10-40	0-25	NP-7
WokAH:												
Wilbur-----	0-7	Silt loam-----	CL, CL-ML, ML	A-4	0	0	100	100	95-100	70-100	20-30	3-10
	7-32	Silt loam-----	CL, CL-ML, ML	A-4	0	0	100	100	95-100	80-100	20-30	3-10
	32-60	Silt loam, loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	80-100	60-100	20-35	3-15
WolAI:												
Wilhite-----	0-9	Silty clay	CH, CL	A-7-6	0	0	100	100	95-100	90-100	40-60	15-32
	9-38	Silty clay, silty clay loam.	CH, CL, ML	A-6, A-7-6	0	0	100	100	95-100	90-100	35-60	10-32
	38-60	Silty clay, silty clay loam.	CH, CL, ML	A-6, A-7-6	0	0	100	100	90-100	85-95	35-60	10-32
WomAH:												
Wilhite-----	0-9	Silty clay loam.	CL	A-6, A-7-6	0	0	100	100	95-100	90-100	30-50	10-22
	9-38	Silty clay, silty clay loam.	CH, CL, ML	A-6, A-7-6	0	0	100	100	95-100	90-100	35-60	10-32
	38-60	Silty clay, silty clay loam.	CH, CL, ML	A-6, A-7-6	0	0	100	100	90-100	85-95	35-60	10-32
WprAQ:												
Wirt-----	0-8	Loam-----	CL, CL-ML, ML	A-4	0	0	98-100	95-100	80-95	60-75	18-30	3-10
	8-44	Silt loam, loam, sandy loam.	CL, ML, SC, SM	A-2-4, A-4	0	0	95-100	80-100	50-100	25-85	15-30	2-10
	44-60	Loam, gravelly sandy loam, clay loam.	CL, ML, SC, SM	A-1-B, A-2-4, A-4, A-6	0	0	80-100	50-100	30-95	15-75	15-40	NP-20

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
WpuAK:												
Wirt-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4	0	0	98-100	95-100	80-100	60-90	18-30	3-10
	8-38	Silt loam, loam, sandy loam.	CL, ML, SC, SM	A-2-4, A-4	0	0	95-100	90-100	55-100	30-85	15-30	2-10
	38-60	Loam, sandy loam, loamy sand.	CL-ML, ML, SC-SM, SM	A-1-B, A-2-4, A-4	0	0	95-100	90-100	45-95	15-75	0-24	NP-7
WpuAV:												
Wirt-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4	0	0	98-100	95-100	80-100	60-90	18-30	3-10
	8-38	Silt loam, loam, sandy loam.	CL, ML, SC, SM	A-2-4, A-4	0	0	95-100	90-100	55-100	30-85	15-30	2-10
	38-60	Loam, sandy loam, loamy sand.	CL-ML, ML, SC-SM, SM	A-1-B, A-2-4, A-4	0	0	95-100	90-100	45-95	15-75	0-24	NP-7
WpyBJ:												
Wirt-----	0-21	Silt loam-----	CL, CL-ML, ML	A-4	0	0	100	100	90-100	70-90	14-30	2-10
	21-54	Sandy loam, fine sandy loam, loam.	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	100	95-100	60-95	30-75	12-24	1-7
	54-60	Loam, sandy loam, loamy sand.	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	100	95-100	55-95	20-75	0-24	NP-7
Pekin-----												
	0-9	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	75-100	15-30	3-12
	9-27	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	75-100	24-38	5-18
	27-44	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	75-100	25-40	6-20
	44-60	Silt loam, silty clay loam, sandy loam.	CL, ML, SC, SM	A-2, A-4, A-6	0	0	90-100	85-100	50-100	25-95	15-38	3-18
ZamB2:												
Zanesville-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	1-17
	8-28	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	24-50	3-28
	28-55	Silt loam, silty clay loam.	CL	A-4, A-6, A-7-6	0	0	95-100	95-100	95-100	75-100	24-44	8-25
	55-68	Channery sandy clay loam, loam, clay.	CH, CL, SC	A-2, A-4, A-6, A-7-6	0-1	0-10	80-100	75-100	60-100	25-95	28-68	8-45
	68-80	Weathered bedrock.	---	---	0	0	0	0	0	0	---	NP

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
ZamC2:												
Zanesville-----	0-8	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	1-17
	8-26	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	24-50	3-28
	26-50	Silt loam, silty clay loam.	CL	A-4, A-6, A-7-6	0	0	95-100	95-100	95-100	75-100	24-44	8-25
	50-68	Channery sandy clay loam, loam, clay.	CH, CL, SC	A-2, A-4, A-6, A-7-6	0-1	0-10	80-100	75-100	60-100	25-95	28-68	8-45
	68-80	Weathered bedrock.	---	---	0	0	0	0	0	0	---	NP
ZamC3:												
Zanesville-----	0-6	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	1-17
	6-18	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	24-50	3-28
	18-43	Silt loam, silty clay loam.	CL	A-4, A-6, A-7-6	0	0	95-100	95-100	95-100	75-100	24-44	8-25
	43-68	Channery sandy clay loam, loam, clay.	CH, CL, SC	A-2, A-4, A-6, A-7-6	0-1	0-10	80-100	75-100	60-100	25-95	28-68	8-45
	68-80	Weathered bedrock.	---	---	0	0	0	0	0	0	---	NP
ZamD2:												
Zanesville-----	0-6	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	1-17
	6-22	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	24-50	3-28
	22-50	Silt loam, silty clay loam.	CL	A-4, A-6, A-7-6	0	0	95-100	95-100	95-100	75-100	24-44	8-25
	50-68	Channery sandy clay loam, loam, clay.	CH, CL, SC	A-2, A-4, A-6, A-7-6	0-1	0-10	80-100	75-100	60-100	25-95	28-68	8-45
	68-80	Weathered bedrock.	---	---	0	0	0	0	0	0	---	NP
ZamD5:												
Zanesville-----	0-2	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	1-17
	2-13	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	24-50	3-28
	13-35	Silt loam, silty clay loam.	CL	A-4, A-6, A-7-6	0	0	95-100	95-100	95-100	75-100	24-44	8-25
	35-60	Channery sandy clay loam, loam, clay.	CH, CL, SC	A-2, A-4, A-6, A-7-6	0-1	0-10	80-100	75-100	60-100	25-95	28-68	8-45
	60-72	Weathered bedrock.	---	---	0	0	0	0	0	0	---	NP

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches						
							4	10	40	200		
	In				Pct	Pct					Pct	
ZapD3: Zanesville-----	0-6	Silt loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	22-40	1-17
	6-16	Silt loam, silty clay loam.	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	85-100	24-50	3-28
	16-36	Silt loam, silty clay loam.	CL	A-4, A-6, A-7-6	0	0	95-100	95-100	95-100	75-100	24-44	8-25
	36-68	Channery sandy clay loam, loam, clay.	CH, CL, SC	A-2, A-4, A-6, A-7-6	0-1	0-10	80-100	75-100	60-100	25-95	28-68	8-45
	68-80	Weathered bedrock.	---	---	0	0	0	0	0	0	---	NP
Tulip-----	0-5	Silt loam, channery silt loam.	CL, ML, SC, SM	A-4, A-6	0-2	0-15	75-100	70-98	60-98	45-90	23-40	2-17
	5-26	Silt loam, channery silty clay loam, channery loam.	CL, CL-ML, SC, SC-SM	A-2-4, A-2-6, A-4, A-6	0-2	0-20	55-98	50-95	40-95	30-90	24-40	6-22
	26-60	Silty clay loam, clay, channery silty clay loam.	CH, CL	A-6, A-7-6	0	0-5	75-100	70-98	65-98	60-95	33-68	11-45
	60-80	Clay, silty clay.	CH, CL	A-7-6	0	0-1	95-100	90-100	80-100	70-95	41-68	20-45

Table 18.--Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data was not available or was not estimated.)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
AbgAU:												
Adrian-----	0-40	---	0.30-0.55	0.60-6.00	0.35-0.45	Low-----	55-75	---	---	2	2	134
	40-60	2-10	1.40-1.75	6.00-20.00	0.03-0.08	Low-----	0.0-1.0	0.02	0.05	---	---	---
AfeC:												
Alvin-----	0-9	5-10	1.45-1.65	6.00-20.00	0.09-0.12	Low-----	0.5-1.5	0.10	0.10	5	2	134
	9-12	10-15	1.45-1.65	2.00-6.00	0.10-0.17	Low-----	0.0-0.5	0.17	0.17	---	---	---
	12-28	15-22	1.40-1.65	2.00-6.00	0.14-0.18	Low-----	0.0-0.5	0.17	0.17	---	---	---
	28-80	3-10	1.45-1.65	2.00-6.00	0.10-0.15	Low-----	0.0-0.5	0.15	0.15	---	---	---
Bloomfield-----	0-8	5-10	1.45-1.65	6.00-20.00	0.09-0.13	Low-----	0.5-1.5	0.10	0.10	5	2	134
	8-16	2-10	1.45-1.65	6.00-20.00	0.08-0.12	Low-----	0.0-1.0	0.15	0.15	---	---	---
	16-70	5-13	1.60-1.80	2.00-20.00	0.08-0.12	Low-----	0.0-1.0	0.10	0.10	---	---	---
	70-80	5-13	1.60-1.80	2.00-20.00	0.08-0.12	Low-----	0.0-1.0	0.10	0.10	---	---	---
AfeD:												
Alvin-----	0-9	5-10	1.45-1.65	6.00-20.00	0.09-0.12	Low-----	0.5-1.5	0.10	0.10	5	2	134
	9-12	10-15	1.45-1.65	2.00-6.00	0.10-0.17	Low-----	0.0-0.5	0.17	0.17	---	---	---
	12-28	15-22	1.40-1.65	2.00-6.00	0.14-0.18	Low-----	0.0-0.5	0.17	0.17	---	---	---
	28-80	3-10	1.45-1.65	2.00-6.00	0.10-0.15	Low-----	0.0-0.5	0.15	0.15	---	---	---
Bloomfield-----	0-8	5-10	1.45-1.65	6.00-20.00	0.09-0.13	Low-----	0.5-1.5	0.10	0.10	5	2	134
	8-35	2-10	1.45-1.65	6.00-20.00	0.08-0.12	Low-----	0.0-1.0	0.15	0.15	---	---	---
	35-70	5-13	1.60-1.80	2.00-20.00	0.08-0.12	Low-----	0.0-1.0	0.10	0.10	---	---	---
	70-80	5-13	1.60-1.80	2.00-20.00	0.08-0.12	Low-----	0.0-1.0	0.10	0.10	---	---	---
AffE:												
Alvin-----	0-9	5-10	1.45-1.65	6.00-20.00	0.09-0.12	Low-----	0.5-1.5	0.10	0.10	5	2	134
	9-12	10-15	1.45-1.65	2.00-6.00	0.10-0.17	Low-----	0.0-0.5	0.17	0.17	---	---	---
	12-28	15-22	1.40-1.65	2.00-6.00	0.14-0.18	Low-----	0.0-0.5	0.17	0.17	---	---	---
	28-80	3-10	1.45-1.65	2.00-6.00	0.10-0.15	Low-----	0.0-0.5	0.15	0.15	---	---	---
Bloomfield-----	0-8	5-10	1.45-1.65	6.00-20.00	0.09-0.13	Low-----	0.5-1.5	0.10	0.10	5	2	134
	8-35	2-10	1.45-1.65	6.00-20.00	0.08-0.12	Low-----	0.0-1.0	0.15	0.15	---	---	---
	35-70	5-13	1.60-1.80	2.00-20.00	0.08-0.12	Low-----	0.0-1.0	0.10	0.10	---	---	---
	70-80	5-13	1.60-1.80	2.00-20.00	0.08-0.12	Low-----	0.0-1.0	0.10	0.10	---	---	---
Princeton-----	0-8	10-20	1.55-1.70	0.60-2.00	0.13-0.18	Low-----	0.5-1.5	0.24	0.24	5	3	86
	8-41	18-25	1.45-1.60	0.60-2.00	0.16-0.19	Low-----	0.0-1.0	0.28	0.28	---	---	---
	41-60	8-18	1.40-1.65	2.00-6.00	0.10-0.17	Low-----	0.0-0.5	0.20	0.20	---	---	---
	60-80	4-10	1.50-1.75	2.00-6.00	0.06-0.12	Low-----	0.0-0.5	0.15	0.15	---	---	---
AfsB:												
Alvin-----	0-9	8-15	1.45-1.65	2.00-6.00	0.14-0.17	Low-----	0.5-1.5	0.24	0.24	5	3	86
	9-12	10-15	1.45-1.65	2.00-6.00	0.10-0.17	Low-----	0.0-0.5	0.17	0.17	---	---	---
	12-28	15-22	1.40-1.65	2.00-6.00	0.14-0.18	Low-----	0.0-0.5	0.17	0.17	---	---	---
	28-80	3-10	1.45-1.65	2.00-6.00	0.10-0.15	Low-----	0.0-0.5	0.15	0.15	---	---	---
Princeton-----	0-8	10-20	1.55-1.70	0.60-2.00	0.13-0.18	Low-----	0.5-1.5	0.24	0.24	5	3	86
	8-41	18-25	1.45-1.60	0.60-2.00	0.16-0.19	Low-----	0.0-1.0	0.28	0.28	---	---	---
	41-60	8-18	1.40-1.65	2.00-6.00	0.10-0.17	Low-----	0.0-0.5	0.20	0.20	---	---	---
	60-80	4-10	1.50-1.75	2.00-6.00	0.06-0.12	Low-----	0.0-0.5	0.15	0.15	---	---	---
AfsC:												
Alvin-----	0-9	8-15	1.45-1.65	2.00-6.00	0.14-0.17	Low-----	0.5-1.5	0.24	0.24	5	3	86
	9-12	10-15	1.45-1.65	2.00-6.00	0.10-0.17	Low-----	0.0-0.5	0.17	0.17	---	---	---
	12-28	15-22	1.40-1.65	2.00-6.00	0.14-0.18	Low-----	0.0-0.5	0.17	0.17	---	---	---
	28-80	3-10	1.45-1.65	2.00-6.00	0.10-0.15	Low-----	0.0-0.5	0.15	0.15	---	---	---

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
Princeton-----	0-8	10-20	1.55-1.70	0.60-2.00	0.13-0.18	Low-----	0.5-1.5	0.24	0.24	5	3	86
	8-41	18-25	1.45-1.60	0.60-2.00	0.16-0.19	Low-----	0.0-1.0	0.28	0.28	---	---	---
	41-60	8-18	1.40-1.65	2.00-6.00	0.10-0.17	Low-----	0.0-0.5	0.20	0.20	---	---	---
	60-80	4-10	1.50-1.75	2.00-6.00	0.06-0.12	Low-----	0.0-0.5	0.15	0.15	---	---	---
AftD:												
Alvin-----	0-9	8-15	1.45-1.65	2.00-6.00	0.14-0.17	Low-----	0.5-1.5	0.15	0.15	5	3	86
	9-12	10-15	1.45-1.65	2.00-6.00	0.10-0.17	Low-----	0.0-0.5	0.17	0.17	---	---	---
	12-28	15-22	1.40-1.65	2.00-6.00	0.14-0.18	Low-----	0.0-0.5	0.17	0.17	---	---	---
	28-80	3-10	1.45-1.65	2.00-6.00	0.10-0.15	Low-----	0.0-0.5	0.15	0.15	---	---	---
Princeton-----	0-8	10-20	1.55-1.70	0.60-2.00	0.13-0.18	Low-----	0.5-1.5	0.24	0.24	5	3	86
	8-41	18-25	1.45-1.60	0.60-2.00	0.16-0.19	Low-----	0.0-1.0	0.28	0.28	---	---	---
	41-60	8-18	1.40-1.65	2.00-6.00	0.10-0.17	Low-----	0.0-0.5	0.20	0.20	---	---	---
	60-80	4-10	1.50-1.75	2.00-6.00	0.06-0.12	Low-----	0.0-0.5	0.15	0.15	---	---	---
AhrAK:												
Armiesburg-----	0-16	27-35	1.30-1.60	0.60-2.00	0.21-0.23	Moderate-	2.0-4.0	0.32	0.32	5	7	38-
	16-38	25-35	1.30-1.60	0.60-2.00	0.18-0.20	Moderate-	0.5-2.0	0.37	0.37	---	---	---
	38-60	22-35	1.30-1.60	0.60-2.00	0.16-0.20	Moderate-	0.5-1.0	0.43	0.43	---	---	---
AkeB2:												
Arney-----	0-9	10-26	1.25-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.49	0.49	4	5	56
	9-36	24-32	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	36-60	18-27	1.45-1.70	0.06-0.20	0.08-0.16	Low-----	0.0-0.5	0.55	0.55	---	---	---
	60-80	10-30	1.70-1.85	0.01-0.20	0.08-0.16	Low-----	0.0-0.5	0.55	0.55	---	---	---
AloB2:												
Ava-----	0-8	20-27	1.40-1.60	0.60-2.00	0.21-0.24	Low-----	1.0-3.0	0.55	0.55	4	6	48
	8-27	22-33	1.40-1.60	0.60-2.00	0.15-0.21	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	27-59	20-30	1.55-1.80	0.01-0.06	0.06-0.11	Low-----	0.0-0.5	0.55	0.55	---	---	---
	59-80	20-30	1.55-1.75	0.01-0.20	0.05-0.10	Low-----	0.0-0.5	0.37	0.43	---	---	---
AmkA:												
Ayrshire-----	0-8	5-12	1.40-1.70	0.60-2.00	0.10-0.21	Low-----	0.5-1.5	0.28	0.28	5	3	86
	8-14	5-12	1.40-1.70	0.60-2.00	0.10-0.21	Low-----	0.0-1.0	0.32	0.32	---	---	---
	14-35	22-32	1.25-1.70	0.60-2.00	0.15-0.20	Low-----	0.0-0.5	0.24	0.24	---	---	---
	35-55	8-20	1.45-1.70	0.60-6.00	0.09-0.18	Low-----	0.0-0.5	0.20	0.20	---	---	---
	55-60	5-10	1.40-1.70	2.00-20.00	0.06-0.08	Low-----	0.0-0.5	0.15	0.15	---	---	---
BdxAV:												
Belknap-----	0-13	8-18	1.35-1.55	0.60-2.00	0.21-0.25	Low-----	1.0-3.0	0.49	0.49	5	5	56
	13-47	8-18	1.40-1.60	0.60-2.00	0.21-0.24	Low-----	0.0-1.0	0.64	0.64	---	---	---
	47-60	8-26	1.35-1.65	0.60-2.00	0.17-0.24	Low-----	0.0-0.5	0.49	0.49	---	---	---
BgeAH:												
Birds-----	0-8	15-25	1.30-1.50	0.60-2.00	0.21-0.25	Low-----	1.0-3.0	0.43	0.43	5	6	48
	8-43	18-27	1.40-1.60	0.20-0.60	0.20-0.24	Low-----	0.0-1.0	0.49	0.49	---	---	---
	43-60	15-27	1.35-1.60	0.20-0.60	0.17-0.24	Low-----	0.0-0.5	0.49	0.49	---	---	---
BodAV:												
Bonnie-----	0-9	18-27	1.30-1.60	0.60-2.00	0.22-0.25	Low-----	1.0-3.0	0.43	0.43	5	6	48
	9-47	18-27	1.35-1.60	0.20-0.60	0.21-0.24	Low-----	0.0-1.0	0.49	0.49	---	---	---
	47-60	18-30	1.35-1.55	0.20-0.60	0.18-0.24	Low-----	0.0-0.5	0.49	0.49	---	---	---
CkkB2:												
Cincinnati-----	0-8	18-27	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	4	6	48
	8-29	22-32	1.45-1.65	0.60-2.00	0.15-0.21	Moderate-	0.0-1.0	0.55	0.55	---	---	---
	29-52	25-34	1.60-1.80	0.06-0.20	0.06-0.08	Low-----	0.0-0.5	0.43	0.49	---	---	---
	52-80	25-40	1.55-1.75	0.06-0.20	0.06-0.08	Moderate-	0.0-0.5	0.28	0.37	---	---	---

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
CkkC2:												
Cincinnati-----	0-8	18-27	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	4	6	48
	8-25	22-32	1.45-1.65	0.60-2.00	0.15-0.21	Moderate-	0.0-1.0	0.55	0.55	---	---	---
	25-47	25-34	1.60-1.80	0.06-0.20	0.06-0.08	Low-----	0.0-0.5	0.43	0.49	---	---	---
	47-80	25-40	1.55-1.75	0.06-0.20	0.06-0.08	Moderate-	0.0-0.5	0.28	0.37	---	---	---
CkkC3:												
Cincinnati-----	0-8	18-27	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.49	0.49	2	6	48
	8-18	22-32	1.45-1.65	0.60-2.00	0.15-0.21	Moderate-	0.0-1.0	0.55	0.55	---	---	---
	18-46	25-34	1.60-1.80	0.06-0.20	0.06-0.08	Low-----	0.0-0.5	0.43	0.49	---	---	---
	46-80	25-40	1.55-1.75	0.06-0.20	0.06-0.08	Moderate-	0.0-0.5	0.28	0.37	---	---	---
CkkD2:												
Cincinnati-----	0-6	18-27	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	4	6	48
	6-24	22-32	1.45-1.65	0.60-2.00	0.15-0.21	Moderate-	0.0-1.0	0.55	0.55	---	---	---
	24-32	25-34	1.60-1.80	0.06-0.20	0.06-0.18	Low-----	0.0-0.5	0.43	0.49	---	---	---
	32-80	25-40	1.55-1.75	0.06-0.20	0.06-0.18	Moderate-	0.0-0.5	0.28	0.37	---	---	---
CkkD3:												
Cincinnati-----	0-6	18-27	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.49	0.49	2	6	48
	6-14	22-32	1.45-1.65	0.60-2.00	0.15-0.21	Moderate-	0.0-1.0	0.55	0.55	---	---	---
	14-29	25-34	1.60-1.80	0.06-0.20	0.06-0.08	Low-----	0.0-0.5	0.43	0.49	---	---	---
	29-80	25-40	1.55-1.75	0.06-0.20	0.06-0.08	Moderate-	0.0-0.5	0.28	0.37	---	---	---
CspC2:												
Crider-----	0-7	15-27	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.43	0.43	5	6	48
	7-43	24-34	1.40-1.65	0.60-2.00	0.14-0.21	Moderate-	0.0-1.0	0.49	0.49	---	---	---
	43-80	40-75	1.35-1.65	0.60-2.00	0.07-0.16	High-----	0.0-0.5	0.10	0.15	---	---	---
CspC3:												
Crider-----	0-7	15-27	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.43	0.43	4	6	48
	7-30	24-34	1.40-1.65	0.60-2.00	0.14-0.21	Moderate-	0.0-1.0	0.49	0.49	---	---	---
	30-66	40-75	1.35-1.65	0.60-2.00	0.07-0.16	High-----	0.0-0.5	0.10	0.15	---	---	---
DfnA:												
Dubois-----	0-8	10-20	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	4	5	56
	8-18	15-20	1.35-1.60	0.60-2.00	0.20-0.27	Low-----	0.0-1.0	0.55	0.55	---	---	---
	18-30	25-34	1.40-1.60	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	30-65	15-32	1.65-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	65-80	15-40	1.50-1.70	0.01-0.06	0.06-0.08	Moderate-	0.0-0.5	0.43	0.43	---	---	---
Eaad2:												
Ebal-----	0-8	12-26	1.20-1.50	0.60-2.00	0.16-0.24	Low-----	1.0-3.0	0.32	0.49	4	6	48
	8-13	18-34	1.40-1.60	0.60-2.00	0.09-0.24	Moderate-	0.0-1.0	0.20	0.49	---	---	---
	13-21	40-50	1.40-1.65	0.20-0.60	0.07-0.13	Moderate-	0.0-1.0	0.10	0.28	---	---	---
	21-61	45-65	1.40-1.55	0.01-0.06	0.09-0.13	High-----	0.0-0.5	0.24	0.28	---	---	---
	61-80	---	---	0.00-0.01	---	Low-----	---	---	---	---	---	---
GaaE2:												
Gallimore-----	0-4	8-18	1.30-1.40	0.60-2.00	0.10-0.21	Low-----	1.0-3.0	0.32	0.32	4	5	56
	4-35	8-15	1.50-1.70	0.60-2.00	0.09-0.18	Low-----	0.0-0.5	0.37	0.37	---	---	---
	35-48	5-15	1.50-1.70	2.00-6.00	0.09-0.18	Low-----	0.0-0.5	0.20	0.24	---	---	---
	48-80	2-10	1.50-1.60	6.00-20.00	0.06-0.12	Low-----	0.0-0.5	0.02	0.05	---	---	---
GabG:												
Gallimore-----	0-9	8-18	1.30-1.40	0.60-2.00	0.10-0.21	Low-----	2.0-4.0	0.28	0.28	4	5	56
	9-29	8-15	1.50-1.70	0.60-2.00	0.09-0.18	Low-----	0.0-0.5	0.37	0.37	---	---	---
	29-54	5-15	1.50-1.70	2.00-6.00	0.09-0.18	Low-----	0.0-0.5	0.20	0.24	---	---	---
	54-80	2-10	1.50-1.60	6.00-20.00	0.06-0.12	Low-----	0.0-0.5	0.02	0.05	---	---	---

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
GabG:												
Chetwynd-----	0-12	10-20	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	2.0-4.0	0.37	0.37	5	5	56
	12-39	20-30	1.25-1.70	0.60-2.00	0.09-0.21	Moderate-	0.0-0.5	0.17	0.20	---	---	---
	39-56	15-25	1.25-1.70	0.60-2.00	0.09-0.20	Low-----	0.0-0.5	0.10	0.15	---	---	---
	56-80	5-15	1.45-1.70	2.00-6.00	0.05-0.13	Low-----	0.0-0.5	0.10	0.10	---	---	---
GblAH:												
Gessie-----	0-10	18-27	1.30-1.60	0.60-2.00	0.14-0.24	Low-----	1.0-3.0	0.37	0.37	5	4L	86
	10-43	18-27	1.35-1.55	0.60-2.00	0.10-0.22	Low-----	0.5-3.0	0.43	0.43	---	---	---
	43-60	5-20	1.40-1.70	0.60-2.00	0.05-0.22	Low-----	0.5-1.0	0.32	0.37	---	---	---
GmcD3:												
Grayford-----	0-6	12-26	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.43	0.43	2	5	56
	6-23	22-33	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.43	0.43	---	---	---
	23-35	24-35	1.35-1.65	0.60-2.00	0.12-0.16	Moderate-	0.0-0.5	0.24	0.28	---	---	---
	35-51	42-80	1.35-1.65	0.60-2.00	0.07-0.16	High-----	0.0-0.5	0.15	0.24	---	---	---
	51-60	---	---	0.00-0.06	---	Low-----	---	---	---	---	---	---
GmcE2:												
Grayford-----	0-5	12-26	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.49	0.49	3	5	56
	5-10	22-33	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.43	0.43	---	---	---
	10-36	24-35	1.35-1.65	0.60-2.00	0.12-0.16	Moderate-	0.0-0.5	0.24	0.28	---	---	---
	36-51	42-80	1.35-1.65	0.60-2.00	0.07-0.16	High-----	0.0-0.5	0.15	0.24	---	---	---
	51-60	---	---	0.00-0.06	---	Low-----	---	---	---	---	---	---
Gmhd2:												
Grayford-----	0-7	12-26	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.49	0.49	3	5	56
	7-27	22-33	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.43	0.43	---	---	---
	27-36	24-35	1.35-1.65	0.60-2.00	0.12-0.16	Moderate-	0.0-0.5	0.24	0.28	---	---	---
	36-57	42-80	1.35-1.65	0.60-2.00	0.07-0.16	High-----	0.0-0.5	0.15	0.24	---	---	---
	57-60	---	---	0.00-0.06	---	Low-----	---	---	---	---	---	---
Ryker-----	0-8	15-27	1.30-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.43	0.43	5	6	48
	8-28	22-32	1.40-1.70	0.60-2.00	0.14-0.20	Moderate-	0.0-1.0	0.49	0.49	---	---	---
	28-53	22-38	1.40-1.65	0.60-2.00	0.12-0.20	Moderate-	0.0-0.5	0.32	0.32	---	---	---
	53-67	40-75	1.35-1.65	0.60-2.00	0.06-0.16	High-----	0.0-0.5	0.20	0.20	---	---	---
GmpE2:												
Greybrook-----	0-7	15-27	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.43	0.43	5	6	48
	7-18	15-27	1.35-1.65	0.60-2.00	0.20-0.27	Low-----	0.5-2.0	0.55	0.55	---	---	---
	18-59	18-35	1.40-1.65	0.06-0.20	0.12-0.20	Moderate-	0.0-0.5	0.32	0.37	---	---	---
	59-80	18-35	1.40-1.60	0.06-0.20	0.12-0.20	Moderate-	0.0-0.5	0.43	0.49	---	---	---
GmpF:												
Greybrook-----	0-5	15-27	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	2.0-4.0	0.43	0.43	5	6	48
	5-15	15-27	1.35-1.65	0.60-2.00	0.20-0.27	Low-----	0.5-2.0	0.55	0.55	---	---	---
	15-62	18-35	1.40-1.65	0.06-0.20	0.12-0.20	Moderate-	0.0-0.5	0.32	0.37	---	---	---
	62-80	18-35	1.40-1.60	0.06-0.20	0.12-0.20	Moderate-	0.0-0.5	0.43	0.49	---	---	---
Hard2:												
Haggatt-----	0-5	12-27	1.20-1.65	0.60-2.00	0.16-0.24	Low-----	1.0-3.0	0.37	0.43	3	6	48
	5-16	24-34	1.40-1.70	0.60-2.00	0.12-0.21	Moderate-	0.0-1.0	0.28	0.37	---	---	---
	16-44	45-75	1.35-1.65	0.60-2.00	0.07-0.16	High-----	0.0-1.0	0.15	0.15	---	---	---
	44-60	---	---	0.00-20.00	---	Low-----	---	---	---	---	---	---
Hard3:												
Haggatt-----	0-4	27-35	1.30-1.65	0.60-2.00	0.16-0.20	Low-----	0.5-2.0	0.37	0.43	2	6	48
	4-16	24-34	1.40-1.70	0.60-2.00	0.12-0.20	Moderate-	0.0-1.0	0.28	0.37	---	---	---
	16-44	45-75	1.35-1.65	0.60-2.00	0.07-0.16	High-----	0.0-1.0	0.15	0.15	---	---	---
	44-60	---	---	0.00-20.00	---	Low-----	---	---	---	---	---	---

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
HasE2:												
Haggatt-----	0-5	12-27	1.20-1.65	0.60-2.00	0.16-0.24	Low-----	1.0-3.0	0.37	0.43	3	6	48
	5-16	24-34	1.40-1.70	0.60-2.00	0.12-0.21	Moderate-	0.0-1.0	0.28	0.37	---	---	---
	16-44	45-75	1.35-1.65	0.60-2.00	0.07-0.16	High-----	0.0-1.0	0.15	0.15	---	---	---
	44-60	---	---	0.00-20.00	---	Low-----	---	---	---	---	---	---
Caneyville-----												
Caneyville-----	0-8	12-25	1.20-1.55	0.60-2.00	0.17-0.24	Low-----	1.0-3.0	0.43	0.43	2	5	56
	8-14	24-38	1.40-1.60	0.60-2.00	0.13-0.21	Moderate-	0.0-1.0	0.43	0.43	---	---	---
	14-33	40-60	1.35-1.65	0.20-0.60	0.06-0.16	High-----	0.0-0.2	0.17	0.20	---	---	---
	33-40	---	---	0.06-2.00	---	Low-----	---	---	---	---	---	---
HccA:												
Haubstadt-----	0-8	15-27	1.25-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.49	0.49	4	6	48
	8-34	20-34	1.30-1.70	0.60-2.00	0.16-0.24	Moderate-	0.5-1.0	0.55	0.55	---	---	---
	34-61	24-32	1.60-1.80	0.06-0.20	0.06-0.08	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	61-80	18-30	1.55-1.65	0.06-0.20	0.06-0.08	Low-----	0.0-0.5	0.37	0.43	---	---	---
HccB2:												
Haubstadt-----	0-7	15-27	1.25-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	4	6	48
	7-32	20-34	1.30-1.70	0.60-2.00	0.16-0.24	Moderate-	0.5-1.0	0.55	0.55	---	---	---
	32-61	24-32	1.60-1.80	0.06-0.20	0.06-0.08	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	61-80	18-30	1.55-1.65	0.06-0.20	0.06-0.08	Low-----	0.0-0.5	0.37	0.43	---	---	---
HccC3:												
Haubstadt-----	0-7	20-27	1.25-1.60	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.49	0.49	3	6	48
	7-18	20-34	1.30-1.70	0.60-2.00	0.16-0.24	Moderate-	0.5-1.0	0.55	0.55	---	---	---
	18-42	24-32	1.60-1.80	0.06-0.20	0.06-0.08	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	42-80	18-30	1.55-1.65	0.06-0.20	0.06-0.08	Low-----	0.0-0.5	0.37	0.43	---	---	---
HcgAH:												
Haymond-----	0-10	10-20	1.30-1.50	0.60-2.00	0.20-0.24	Low-----	1.0-3.0	0.43	0.43	5	5	56
	10-44	10-18	1.30-1.50	0.60-2.00	0.20-0.24	Low-----	0.5-2.0	0.55	0.55	---	---	---
	44-60	5-26	1.30-1.50	0.60-2.00	0.14-0.22	Low-----	0.0-1.0	0.43	0.49	---	---	---
HchA:												
Haymond-----	0-7	10-18	1.25-1.60	0.60-2.00	0.20-0.24	Low-----	1.0-3.0	0.43	0.43	5	5	56
	7-33	10-18	1.30-1.50	0.60-2.00	0.20-0.24	Low-----	0.5-2.0	0.55	0.55	---	---	---
	33-60	5-26	1.30-1.50	0.60-2.00	0.14-0.22	Low-----	0.0-1.0	0.43	0.49	---	---	---
HefG:												
Hickory-----	0-6	12-25	1.20-1.55	0.60-2.00	0.18-0.22	Low-----	2.0-4.0	0.28	0.28	5	6	48
	6-35	18-35	1.45-1.70	0.60-2.00	0.12-0.19	Moderate-	0.0-1.0	0.24	0.28	---	---	---
	35-45	15-32	1.50-1.70	0.60-2.00	0.11-0.16	Low-----	0.0-0.5	0.24	0.28	---	---	---
	45-80	15-26	1.60-1.80	0.60-2.00	0.06-0.15	Low-----	0.0-0.5	0.28	0.32	---	---	---
Held2:												
Hickory-----	0-6	15-25	1.20-1.55	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.43	0.43	5	6	48
	6-70	18-35	1.45-1.65	0.60-2.00	0.12-0.19	Moderate-	0.0-1.0	0.24	0.28	---	---	---
	70-80	15-32	1.50-1.70	0.60-2.00	0.08-0.16	Low-----	0.0-0.5	0.24	0.28	---	---	---
Stinesville-----												
Stinesville-----	0-7	15-26	1.20-1.65	0.60-2.00	0.17-0.26	Low-----	1.0-3.0	0.43	0.43	5	6	48
	7-46	24-30	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.49	0.49	---	---	---
	46-75	16-24	1.40-1.70	0.60-2.00	0.16-0.21	Low-----	0.0-0.5	0.49	0.49	---	---	---
	75-80	27-35	1.40-1.70	0.60-2.00	0.13-0.19	High-----	0.0-0.5	0.32	0.32	---	---	---
HeoE:												
Hickory-----	0-11	12-25	1.20-1.55	0.60-2.00	0.18-0.24	Low-----	2.0-4.0	0.37	0.37	5	6	48
	11-70	18-35	1.45-1.70	0.60-2.00	0.12-0.19	Moderate-	0.0-1.0	0.24	0.28	---	---	---
	70-80	15-32	1.50-1.70	0.60-2.00	0.11-0.16	Low-----	0.0-0.5	0.24	0.28	---	---	---

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
HeoE3:												
Hickory-----	0-4	15-25	1.30-1.55	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.43	0.43	4	6	48
	4-55	18-35	1.45-1.70	0.60-2.00	0.12-0.19	Moderate-	0.0-0.5	0.24	0.28	---	---	---
	55-80	15-32	1.50-1.70	0.60-2.00	0.11-0.16	Low-----	0.0-0.5	0.24	0.28	---	---	---
HeoG:												
Hickory-----	0-9	12-25	1.20-1.55	0.60-2.00	0.18-0.24	Low-----	2.0-4.0	0.37	0.37	5	6	48
	9-70	18-35	1.45-1.70	0.60-2.00	0.12-0.19	Moderate-	0.0-1.0	0.24	0.28	---	---	---
	70-80	15-32	1.50-1.70	0.60-2.00	0.11-0.16	Low-----	0.0-0.5	0.24	0.28	---	---	---
HepG:												
Hickory-----	0-9	12-25	1.20-1.55	0.60-2.00	0.18-0.24	Low-----	2.0-4.0	0.37	0.37	5	6	48
	9-59	18-35	1.45-1.70	0.60-2.00	0.12-0.19	Moderate-	0.0-1.0	0.24	0.28	---	---	---
	59-80	15-32	1.50-1.70	0.60-2.00	0.08-0.16	Low-----	0.0-0.5	0.24	0.28	---	---	---
Adyeville-----												
	0-4	5-18	1.20-1.40	0.60-2.00	0.17-0.22	Low-----	2.0-4.0	0.43	0.49	3	5	56
	4-25	5-18	1.40-1.60	0.60-2.00	0.09-0.21	Low-----	0.0-0.5	0.24	0.43	---	---	---
	25-60	---	---	0.00-0.60	---	Low-----	---	---	---	---	---	---
HesG:												
Hickory-----	0-6	12-25	1.20-1.55	0.60-2.00	0.18-0.22	Low-----	2.0-4.0	0.28	0.28	5	6	48
	6-35	18-35	1.45-1.65	0.60-2.00	0.12-0.19	Moderate-	0.0-1.0	0.24	0.28	---	---	---
	35-45	15-32	1.50-1.70	0.60-2.00	0.11-0.16	Low-----	0.0-0.5	0.24	0.28	---	---	---
	45-80	15-26	1.60-1.80	0.60-2.00	0.06-0.15	Low-----	0.0-0.5	0.28	0.32	---	---	---
Chetwynd-----												
	0-10	10-20	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	2.0-4.0	0.28	0.28	5	5	56
	10-35	20-30	1.25-1.70	0.60-2.00	0.09-0.21	Moderate-	0.0-0.5	0.17	0.20	---	---	---
	35-58	15-25	1.25-1.70	0.60-2.00	0.09-0.20	Low-----	0.0-0.5	0.10	0.15	---	---	---
	58-80	5-15	1.45-1.70	2.00-6.00	0.05-0.13	Low-----	0.0-0.5	0.10	0.10	---	---	---
HeuE:												
Hickory-----	0-9	12-25	1.20-1.55	0.60-2.00	0.18-0.24	Low-----	2.0-4.0	0.37	0.37	5	6	48
	9-68	18-35	1.45-1.70	0.60-2.00	0.12-0.19	Moderate-	0.0-1.0	0.24	0.28	---	---	---
	68-80	15-32	1.50-1.70	0.60-2.00	0.11-0.16	Low-----	0.0-0.5	0.24	0.28	---	---	---
Wellston-----												
	0-4	13-27	1.20-1.55	0.60-2.00	0.18-0.24	Low-----	2.0-4.0	0.43	0.43	4	6	48
	4-28	18-35	1.40-1.65	0.60-2.00	0.14-0.21	Moderate-	0.0-1.0	0.55	0.55	---	---	---
	28-44	15-30	1.30-1.65	0.60-2.00	0.12-0.17	Low-----	0.0-0.5	0.32	0.49	---	---	---
	44-52	15-30	1.30-1.60	0.60-2.00	0.06-0.16	Low-----	0.0-0.5	0.20	0.43	---	---	---
	52-60	---	---	0.00-0.60	---	Low-----	---	---	---	---	---	---
HeuF:												
Hickory-----	0-9	12-25	1.20-1.55	0.60-2.00	0.18-0.24	Low-----	2.0-4.0	0.37	0.37	5	6	48
	9-60	18-35	1.45-1.70	0.60-2.00	0.12-0.19	Moderate-	0.0-1.0	0.24	0.28	---	---	---
	60-80	15-32	1.50-1.70	0.60-2.00	0.11-0.16	Low-----	0.0-0.5	0.24	0.28	---	---	---
Wellston-----												
	0-3	13-27	1.20-1.55	0.60-2.00	0.18-0.24	Low-----	2.0-4.0	0.43	0.43	4	6	48
	3-22	18-35	1.40-1.65	0.60-2.00	0.14-0.21	Moderate-	0.0-1.0	0.55	0.55	---	---	---
	22-32	15-30	1.30-1.65	0.60-2.00	0.12-0.17	Low-----	0.1-0.5	0.32	0.49	---	---	---
	32-41	15-30	1.30-1.60	0.60-2.00	0.06-0.16	Low-----	0.0-0.5	0.20	0.43	---	---	---
	41-60	---	---	0.00-0.60	---	Low-----	---	---	---	---	---	---
HkaB:												
Hollybrook-----	0-8	16-26	1.30-1.65	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.55	0.55	3	6	48
	8-23	20-34	1.65-1.80	0.01-0.06	0.08-0.14	Moderate-	0.0-1.0	0.49	0.55	---	---	---
	23-54	20-34	1.65-1.80	0.01-0.06	0.08-0.14	Moderate-	0.0-1.0	0.43	0.49	---	---	---
	54-80	24-40	1.55-1.75	0.01-0.20	0.08-0.14	High-----	1.0-3.0	0.37	0.49	---	---	---
HleAV:												
Holton-----	0-14	6-18	1.35-1.55	0.60-2.00	0.20-0.24	Low-----	1.0-2.0	0.43	0.43	5	5	56
	14-41	6-18	1.35-1.55	0.60-2.00	0.14-0.22	Low-----	0.0-1.0	0.32	0.37	---	---	---
	41-60	6-27	1.40-1.60	0.60-6.00	0.12-0.19	Low-----	0.0-0.5	0.24	0.37	---	---	---

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
HnoA:												
Hoosierville----	0-13	10-18	1.30-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-2.0	0.55	0.55	4	5	56
	13-40	24-32	1.40-1.60	0.60-2.00	0.16-0.20	Moderate-	0.0-0.5	0.49	0.49	---	---	---
	40-72	15-27	1.60-1.80	0.06-0.20	0.08-0.12	Low-----	0.0-0.5	0.49	0.49	---	---	---
	72-80	20-32	1.50-1.70	0.06-0.20	0.12-0.16	Moderate-	0.0-0.5	0.43	0.43	---	---	---
LnfA:												
Lieber-----	0-9	10-18	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	4	5	56
	9-19	10-18	1.35-1.65	0.60-2.00	0.20-0.27	Low-----	0.0-0.5	0.55	0.55	---	---	---
	19-34	24-32	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.43	0.43	---	---	---
	34-57	20-32	1.50-1.80	0.06-0.20	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	57-80	15-30	1.60-1.80	0.06-0.20	0.12-0.16	Moderate-	0.0-0.5	0.43	0.43	---	---	---
LnfB:												
Lieber-----	0-9	10-18	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	4	5	56
	9-19	10-18	1.35-1.65	0.60-2.00	0.20-0.27	Low-----	0.0-0.5	0.55	0.55	---	---	---
	19-34	24-32	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.49	0.49	---	---	---
	34-57	20-32	1.50-1.80	0.06-0.20	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	57-80	15-30	1.60-1.80	0.06-0.20	0.12-0.16	Moderate-	0.0-0.5	0.43	0.43	---	---	---
MecA:												
Martinsville----	0-8	8-20	1.30-1.60	0.60-2.00	0.18-0.22	Low-----	1.0-3.0	0.28	0.32	5	5	56
	8-17	15-33	1.40-1.60	0.60-2.00	0.15-0.19	Moderate-	0.0-1.0	0.28	0.32	---	---	---
	17-35	20-33	1.40-1.60	0.60-2.00	0.14-0.19	Moderate-	0.0-0.5	0.28	0.32	---	---	---
	35-53	15-25	1.40-1.65	0.60-2.00	0.10-0.19	Low-----	0.0-0.5	0.24	0.28	---	---	---
	53-60	5-20	1.50-1.70	0.60-2.00	0.08-0.17	Low-----	0.0-0.5	0.24	0.28	---	---	---
MecAQ:												
Martinsville----	0-9	10-24	1.20-1.60	0.60-2.00	0.18-0.22	Low-----	1.0-3.0	0.28	0.32	5	5	56
	9-17	18-33	1.40-1.60	0.60-2.00	0.15-0.19	Moderate-	0.0-1.0	0.28	0.32	---	---	---
	17-58	15-33	1.40-1.60	0.60-2.00	0.10-0.19	Moderate-	0.0-0.5	0.24	0.28	---	---	---
	58-80	5-20	1.50-1.70	0.60-2.00	0.08-0.17	Low-----	0.0-0.5	0.24	0.28	---	---	---
MecB:												
Martinsville----	0-8	8-20	1.30-1.60	0.60-2.00	0.18-0.22	Low-----	1.0-3.0	0.28	0.32	5	5	56
	8-17	15-33	1.40-1.60	0.60-2.00	0.15-0.19	Moderate-	0.0-1.0	0.28	0.32	---	---	---
	17-35	20-33	1.40-1.60	0.60-2.00	0.14-0.19	Moderate-	0.0-0.5	0.28	0.32	---	---	---
	35-53	15-25	1.40-1.65	0.60-2.00	0.10-0.19	Low-----	0.0-0.5	0.20	0.24	---	---	---
	53-60	5-20	1.50-1.70	0.60-2.00	0.08-0.17	Low-----	0.0-0.5	0.28	0.32	---	---	---
MhhAH:												
McAdoo-----	0-10	15-27	1.30-1.55	0.60-2.00	0.22-0.24	Low-----	2.0-3.0	0.43	0.43	5	6	48
	10-48	20-32	1.30-1.50	0.60-2.00	0.18-0.22	Moderate-	0.5-1.0	0.43	0.43	---	---	---
	48-60	7-25	1.35-1.55	0.60-2.00	0.18-0.22	Low-----	0.5-1.0	0.43	0.43	---	---	---
MhhAK:												
McAdoo-----	0-10	15-27	1.30-1.55	0.60-2.00	0.22-0.24	Low-----	2.0-3.0	0.43	0.43	5	6	48
	10-48	20-32	1.30-1.50	0.60-2.00	0.18-0.22	Moderate-	0.5-1.0	0.43	0.43	---	---	---
	48-60	7-25	1.35-1.55	0.60-2.00	0.18-0.22	Low-----	0.5-1.0	0.43	0.43	---	---	---
MhuA:												
McGary-----	0-11	20-27	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.49	0.49	4	6	48
	11-42	40-50	1.45-1.60	0.06-0.60	0.11-0.18	High-----	0.0-1.0	0.37	0.37	---	---	---
	42-50	40-50	1.45-1.60	0.01-0.20	0.11-0.18	High-----	0.0-0.5	0.28	0.28	---	---	---
	50-60	35-50	1.50-1.65	0.01-0.06	0.11-0.18	Moderate-	0.0-0.5	0.32	0.32	---	---	---
MrcG:												
Minnehaha-----	0-3	27-34	1.40-1.60	2.00-6.00	0.05-0.15	Moderate-	1.0-5.0	0.28	0.32	5	6	48
	3-60	22-34	1.40-1.70	2.00-6.00	0.02-0.10	Moderate-	0.5-4.0	0.15	0.24	---	---	---

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
MsvA:												
Montgomery-----	0-15	35-50	1.30-1.55	0.60-2.00	0.17-0.22	Moderate-	2.0-5.0	0.32	0.32	4	4	86
	15-24	40-50	1.45-1.65	0.06-0.60	0.11-0.14	High-----	0.5-2.0	0.32	0.32	---	---	---
	24-48	35-50	1.45-1.65	0.06-0.20	0.11-0.18	High-----	0.5-1.0	0.32	0.32	---	---	---
	48-60	28-48	1.50-1.60	0.06-0.20	0.11-0.18	Moderate-	0.5-1.0	0.43	0.43	---	---	---
MvrAH:												
Moundhaven-----	0-14	2-10	1.40-1.50	6.00-20.00	0.10-0.12	Low-----	1.0-2.0	0.05	0.05	5	2	134
	14-60	0-5	1.55-1.70	6.00-20.00	0.05-0.10	Low-----	0.0-0.5	0.10	0.10	---	---	---
NbhAH:												
Newark-----	0-11	7-27	1.20-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.43	0.43	5	5	48
	11-32	18-35	1.20-1.60	0.60-2.00	0.16-0.22	Moderate-	0.5-2.0	0.43	0.43	---	---	---
	32-60	12-40	1.30-1.60	0.60-2.00	0.14-0.20	Moderate-	0.0-2.0	0.49	0.49	---	---	---
OfaAV:												
Oldenburg-----	0-9	8-18	1.30-1.50	0.60-2.00	0.20-0.24	Low-----	1.0-2.0	0.43	0.43	5	5	56
	9-39	8-18	1.35-1.55	0.60-2.00	0.13-0.22	Low-----	0.5-1.0	0.32	0.37	---	---	---
	39-60	5-18	1.35-1.55	0.60-6.00	0.09-0.19	Low-----	0.0-0.5	0.24	0.37	---	---	---
OfcAV:												
Oldenburg-----	0-10	8-18	1.40-1.60	0.60-2.00	0.16-0.18	Low-----	1.0-2.0	0.24	0.24	4	3	86
	10-36	8-18	1.45-1.70	0.60-2.00	0.12-0.17	Low-----	0.5-1.0	0.28	0.28	---	---	---
	36-60	3-10	1.55-1.70	6.00-20.00	0.08-0.11	Low-----	0.5-1.0	0.24	0.24	---	---	---
OfeB:												
Olephant-----	0-8	12-20	1.25-1.65	0.60-2.00	0.17-0.26	Low-----	1.0-3.0	0.49	0.49	5	5	56
	8-30	24-32	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.49	0.49	---	---	---
	30-64	24-32	1.40-1.70	0.20-0.60	0.14-0.21	Moderate-	0.0-0.5	0.49	0.49	---	---	---
	64-80	20-35	1.65-1.85	0.06-0.20	0.06-0.16	Moderate-	0.0-0.5	0.37	0.37	---	---	---
OmkC2:												
Otwell-----	0-8	12-25	1.25-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	4	6	56
	8-23	22-35	1.40-1.60	0.20-2.00	0.14-0.21	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	23-48	18-30	1.60-1.80	0.01-0.60	0.06-0.08	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	48-80	20-35	1.50-1.65	0.01-0.20	0.06-0.08	Moderate-	0.0-0.5	0.37	0.43	---	---	---
OmkC3:												
Otwell-----	0-8	18-27	1.25-1.65	0.60-2.00	0.18-0.22	Low-----	0.5-2.0	0.49	0.49	3	6	48
	8-17	22-35	1.40-1.60	0.20-2.00	0.14-0.21	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	17-42	18-30	1.60-1.80	0.01-0.60	0.06-0.08	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	42-80	20-35	1.50-1.65	0.01-0.20	0.06-0.08	Moderate-	0.0-0.5	0.37	0.43	---	---	---
OmkD3:												
Otwell-----	0-4	18-27	1.25-1.65	0.60-2.00	0.18-0.22	Low-----	0.5-2.0	0.49	0.49	3	6	48
	4-17	22-35	1.40-1.60	0.20-2.00	0.14-0.21	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	17-32	18-30	1.60-1.80	0.01-0.60	0.06-0.08	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	32-80	20-35	1.50-1.65	0.01-0.20	0.06-0.08	Moderate-	0.0-0.5	0.37	0.43	---	---	---
PbbC2:												
Parke-----	0-6	12-27	1.30-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.43	0.43	5	5	56
	6-26	18-30	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.49	0.49	---	---	---
	26-35	18-27	1.40-1.70	0.60-2.00	0.16-0.20	Low-----	0.0-0.5	0.43	0.43	---	---	---
	35-80	10-30	1.40-1.70	0.60-2.00	0.11-0.19	Low-----	0.0-0.5	0.20	0.20	---	---	---
PbbC3:												
Parke-----	0-6	20-27	1.30-1.65	0.60-2.00	0.18-0.23	Low-----	0.5-2.0	0.43	0.43	4	5	56
	6-22	18-30	1.40-1.70	0.60-2.00	0.14-0.20	Moderate-	0.0-0.5	0.49	0.49	---	---	---
	22-30	18-27	1.40-1.70	0.60-2.00	0.16-0.20	Low-----	0.0-0.5	0.43	0.43	---	---	---
	30-80	10-30	1.40-1.70	0.60-2.00	0.11-0.19	Low-----	0.0-0.5	0.20	0.20	---	---	---

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
PbbD2:												
Parke-----	0-6	12-27	1.30-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.43	0.43	5	5	56
	6-26	18-30	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.49	0.49	---	---	---
	26-35	18-27	1.40-1.70	0.60-2.00	0.16-0.20	Low-----	0.0-0.5	0.43	0.43	---	---	---
	35-80	10-30	1.40-1.70	0.60-2.00	0.11-0.19	Low-----	0.0-0.5	0.20	0.20	---	---	---
PbbD3:												
Parke-----	0-6	20-27	1.30-1.65	0.60-2.00	0.18-0.23	Low-----	0.5-2.0	0.43	0.43	4	5	56
	6-22	18-30	1.40-1.70	0.60-2.00	0.14-0.20	Moderate-	0.0-0.5	0.49	0.49	---	---	---
	22-30	18-27	1.40-1.70	0.60-2.00	0.16-0.20	Low-----	0.0-0.5	0.43	0.43	---	---	---
	30-80	10-30	1.40-1.70	0.60-2.00	0.11-0.19	Low-----	0.0-0.5	0.20	0.20	---	---	---
PcnA:												
Patrickburg----	0-11	12-22	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-2.0	0.55	0.55	4	5	56
	11-25	18-30	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	25-55	18-30	1.50-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	55-76	15-27	1.40-1.70	0.01-0.20	0.06-0.08	Low-----	0.0-0.5	0.43	0.55	---	---	---
	76-80	---	---	0.00-0.20	---	Low-----	---	---	---	---	---	---
PcrAQ:												
Pekin-----	0-9	10-22	1.30-1.60	0.60-2.00	0.22-0.24	Low-----	1.0-3.0	0.55	0.55	4	5	56
	9-27	18-30	1.40-1.60	0.60-2.00	0.18-0.22	Low-----	0.5-1.0	0.55	0.55	---	---	---
	27-50	20-32	1.70-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	50-60	10-30	1.40-1.60	0.20-0.60	0.06-0.08	Low-----	0.0-0.5	0.49	0.55	---	---	---
PcrB2:												
Pekin-----	0-9	10-22	1.30-1.60	0.60-2.00	0.22-0.24	Low-----	1.0-3.0	0.55	0.55	4	5	56
	9-27	18-30	1.40-1.60	0.60-2.00	0.18-0.22	Low-----	0.5-1.0	0.55	0.55	---	---	---
	27-44	20-32	1.70-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	44-60	10-30	1.40-1.60	0.20-0.60	0.06-0.08	Low-----	0.0-0.5	0.49	0.55	---	---	---
PcrC2:												
Pekin-----	0-9	10-22	1.30-1.60	0.60-2.00	0.22-0.24	Low-----	1.0-3.0	0.55	0.55	4	5	56
	9-27	18-30	1.40-1.60	0.60-2.00	0.18-0.22	Low-----	0.5-1.0	0.55	0.55	---	---	---
	27-44	20-32	1.70-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	44-60	10-30	1.40-1.60	0.20-0.60	0.06-0.08	Low-----	0.0-0.5	0.49	0.55	---	---	---
PhaA:												
Peoga-----	0-8	12-22	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	5	5	56
	8-19	14-22	1.35-1.55	0.60-2.00	0.20-0.27	Low-----	0.0-1.0	0.55	0.55	---	---	---
	19-36	18-34	1.40-1.55	0.20-0.60	0.20-0.24	Low-----	0.0-0.5	0.55	0.55	---	---	---
	36-76	18-34	1.40-1.75	0.06-0.20	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	76-80	22-34	1.35-1.55	0.06-0.20	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
PhaAP:												
Peoga-----	0-9	12-22	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	5	5	56
	9-52	18-34	1.40-1.60	0.20-0.60	0.20-0.24	Low-----	0.0-0.5	0.55	0.55	---	---	---
	52-70	18-34	1.40-1.70	0.06-0.20	0.06-0.18	Low-----	0.0-0.5	0.55	0.55	---	---	---
	70-80	22-34	1.35-1.60	0.06-0.20	0.06-0.18	Low-----	0.0-0.5	0.55	0.55	---	---	---
PlcAV:												
Piankeshaw-----	0-6	15-25	1.30-1.50	0.60-2.00	0.14-0.20	Low-----	1.0-3.0	0.32	0.43	5	5	56
	6-26	18-25	1.35-1.55	0.60-2.00	0.09-0.18	Low-----	0.0-1.0	0.24	0.37	---	---	---
	26-48	15-20	1.40-1.60	0.60-2.00	0.05-0.16	Low-----	0.0-0.5	0.24	0.37	---	---	---
	48-60	12-20	1.40-1.70	0.60-2.00	0.05-0.15	Low-----	0.0-0.5	0.10	0.37	---	---	---
PlfA:												
Pike-----	0-9	12-20	1.30-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.43	0.43	5	5	56
	9-39	18-30	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.49	0.49	---	---	---
	39-53	18-27	1.40-1.70	0.60-2.00	0.16-0.20	Low-----	0.0-0.5	0.43	0.43	---	---	---
	53-80	10-30	1.40-1.70	0.60-2.00	0.08-0.19	Low-----	0.0-0.5	0.20	0.20	---	---	---

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
PlfB2:												
Pike-----	0-9	12-20	1.30-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.43	0.43	5	5	56
	9-39	18-30	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.49	0.49	---	---	---
	39-53	18-27	1.40-1.70	0.60-2.00	0.16-0.20	Low-----	0.0-0.5	0.43	0.43	---	---	---
	53-80	10-30	1.40-1.70	0.60-2.00	0.08-0.19	Low-----	0.0-0.5	0.20	0.20	---	---	---
Pml:												
Pits, quarry.												
PrwAV:												
Pope-----	0-8	5-15	1.30-1.50	2.00-6.00	0.15-0.18	Low-----	1.0-3.0	0.17	0.17	5	3	86
	8-32	5-18	1.40-1.60	0.60-6.00	0.10-0.17	Low-----	0.0-1.0	0.24	0.24	---	---	---
	32-60	5-20	1.40-1.65	0.60-6.00	0.08-0.17	Low-----	0.0-1.0	0.20	0.20	---	---	---
PryB:												
Potawatomi-----	0-9	16-22	1.20-1.65	0.60-2.00	0.17-0.26	Low-----	1.0-3.0	0.55	0.55	4	5	56
	9-28	24-32	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-1.0	0.55	0.55	---	---	---
	28-46	20-34	1.50-1.75	0.06-0.20	0.06-0.16	Low-----	0.0-0.5	0.55	0.55	---	---	---
	46-77	14-28	1.55-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	77-90	18-32	1.40-1.70	0.01-0.06	0.06-0.16	Moderate-	0.0-0.5	0.10	0.43	---	---	---
PsaD3:												
Pottersville----	0-5	20-27	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.49	0.49	3	6	48
	5-20	20-35	1.40-1.70	0.60-2.00	0.14-0.24	Moderate-	0.5-1.0	0.55	0.55	---	---	---
	20-44	40-60	1.40-1.60	0.20-0.60	0.11-0.15	High-----	0.0-0.5	0.43	0.43	---	---	---
	44-60	25-55	1.40-1.50	0.01-0.06	0.10-0.20	Moderate-	0.0-0.5	0.43	0.43	---	---	---
PsaG:												
Pottersville----	0-7	20-27	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	2.0-4.0	0.43	0.43	4	6	48
	7-24	20-35	1.40-1.70	0.60-2.00	0.14-0.24	Moderate-	0.5-1.0	0.55	0.55	---	---	---
	24-46	40-60	1.40-1.60	0.20-0.60	0.11-0.15	High-----	0.0-0.5	0.43	0.43	---	---	---
	46-60	25-55	1.40-1.50	0.01-0.06	0.10-0.20	Moderate-	0.0-0.5	0.43	0.43	---	---	---
PsbF:												
Pottersville----	0-7	20-27	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	2.0-4.0	0.49	0.49	4	6	48
	7-24	20-35	1.40-1.70	0.60-2.00	0.14-0.24	Moderate-	0.5-1.0	0.55	0.55	---	---	---
	24-46	40-60	1.40-1.60	0.20-0.60	0.11-0.15	High-----	0.0-0.5	0.43	0.43	---	---	---
	46-60	25-55	1.40-1.50	0.01-0.06	0.10-0.20	Moderate-	0.0-0.5	0.43	0.43	---	---	---
Rnn:												
Riverwash.												
RpzG:												
Romona-----	0-6	27-40	1.30-1.50	0.60-2.00	0.12-0.22	Moderate-	4.0-7.0	0.10	0.24	2	7	38
	6-9	35-40	1.35-1.55	0.60-2.00	0.12-0.19	Moderate-	2.0-4.0	0.20	0.28	---	---	---
	9-19	40-60	1.35-1.60	0.20-0.60	0.04-0.14	High-----	1.0-2.0	0.17	0.24	---	---	---
	19-27	40-60	1.35-1.60	0.20-0.60	0.02-0.11	High-----	0.5-2.0	0.05	0.24	---	---	---
	27-37	---	---	0.01-0.60	---	Low-----	---	---	---	---	---	---
Corydon-----	0-5	27-40	1.30-1.50	0.60-2.00	0.16-0.22	Moderate-	4.0-6.0	0.10	0.24	1	7	38
	5-17	35-60	1.35-1.60	0.20-0.60	0.07-0.16	High-----	0.5-2.0	0.10	0.24	---	---	---
	17-27	---	---	0.00-0.01	---	Low-----	---	---	---	---	---	---
Rock outcrop.												
RtcC3:												
Ryker-----	0-6	20-27	1.30-1.65	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.43	0.43	4	6	48
	6-38	22-32	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-1.0	0.49	0.49	---	---	---
	38-67	22-38	1.40-1.65	0.60-2.00	0.12-0.20	Moderate-	0.0-0.5	0.24	0.32	---	---	---
	67-80	40-75	1.35-1.65	0.60-2.00	0.06-0.16	High-----	0.0-0.5	0.17	0.20	---	---	---

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
SfoA:												
Shakamak-----	0-10	14-22	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	4	5	56
	10-28	24-32	1.40-1.70	0.60-2.00	0.14-0.24	Moderate-	0.0-1.0	0.55	0.55	---	---	---
	28-57	20-27	1.50-1.80	0.01-0.06	0.06-0.10	Low-----	0.0-0.5	0.55	0.55	---	---	---
	57-80	18-32	1.40-1.70	0.01-0.20	0.06-0.10	Low-----	0.0-0.5	0.43	0.43	---	---	---
SfyB2:												
Shircliff-----	0-8	18-27	1.30-1.55	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.49	0.49	4	6	48
	8-19	24-36	1.40-1.60	0.60-2.00	0.16-0.22	Moderate-	0.5-1.0	0.43	0.43	---	---	---
	19-43	35-60	1.55-1.65	0.06-0.60	0.12-0.18	High-----	0.0-1.0	0.28	0.28	---	---	---
	43-80	24-50	1.50-1.65	0.06-0.20	0.12-0.22	Moderate-	0.0-0.5	0.37	0.37	---	---	---
SfyC2:												
Shircliff-----	0-6	18-27	1.30-1.55	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.49	0.49	4	6	48
	6-19	24-36	1.40-1.60	0.60-2.00	0.16-0.22	Moderate-	0.5-1.0	0.43	0.43	---	---	---
	19-43	35-60	1.55-1.65	0.06-0.60	0.12-0.18	High-----	0.0-1.0	0.28	0.28	---	---	---
	43-80	24-50	1.50-1.65	0.06-0.20	0.12-0.22	Moderate-	0.0-0.5	0.37	0.37	---	---	---
SneC2:												
Solsberry-----	0-7	14-26	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	4	5	56
	7-21	20-30	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-1.0	0.55	0.55	---	---	---
	21-27	20-30	1.40-1.70	0.20-2.00	0.08-0.17	Low-----	0.0-0.5	0.55	0.55	---	---	---
	27-39	15-30	1.55-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.49	0.55	---	---	---
	39-80	25-45	1.40-1.70	0.01-0.20	0.06-0.08	Moderate-	0.0-0.5	0.28	0.43	---	---	---
SneC3:												
Solsberry-----	0-6	14-26	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.49	0.49	3	5	56
	6-17	20-30	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-1.0	0.55	0.55	---	---	---
	17-23	20-30	1.40-1.70	0.20-2.00	0.08-0.17	Low-----	0.0-0.5	0.55	0.55	---	---	---
	23-39	15-30	1.55-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.49	0.55	---	---	---
	39-80	25-45	1.40-1.70	0.01-0.20	0.06-0.08	Moderate-	0.0-0.5	0.28	0.43	---	---	---
SneD2:												
Solsberry-----	0-7	14-26	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	4	5	56
	7-21	20-30	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-1.0	0.55	0.55	---	---	---
	21-27	20-30	1.40-1.70	0.20-2.00	0.08-0.17	Low-----	0.0-0.5	0.55	0.55	---	---	---
	27-39	15-30	1.55-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.49	0.55	---	---	---
	39-80	25-45	1.40-1.70	0.01-0.20	0.06-0.08	Moderate-	0.0-0.5	0.28	0.43	---	---	---
SneD3:												
Solsberry-----	0-6	14-26	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.55	0.55	3	5	56
	6-17	20-30	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-1.0	0.55	0.55	---	---	---
	17-23	20-30	1.40-1.70	0.20-2.00	0.08-0.17	Low-----	0.0-0.5	0.55	0.55	---	---	---
	23-39	15-30	1.55-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.49	0.55	---	---	---
	39-80	25-45	1.40-1.70	0.01-0.20	0.06-0.08	Moderate-	0.0-0.5	0.28	0.43	---	---	---
SneD5:												
Solsberry-----	0-2	14-26	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.55	0.55	2	5	56
	2-9	20-30	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-1.0	0.55	0.55	---	---	---
	9-18	20-30	1.40-1.70	0.20-2.00	0.08-0.17	Low-----	0.0-0.5	0.55	0.55	---	---	---
	18-42	15-30	1.55-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.49	0.55	---	---	---
	42-80	25-45	1.40-1.70	0.01-0.20	0.06-0.08	Moderate-	0.0-0.5	0.28	0.43	---	---	---
StaAV:												
Steff-----	0-11	8-18	1.20-1.60	0.60-2.00	0.20-0.24	Low-----	1.0-3.0	0.43	0.43	5	5	56
	11-41	10-18	1.30-1.55	0.60-2.00	0.18-0.23	Low-----	0.0-1.0	0.49	0.49	---	---	---
	41-60	8-20	1.40-1.65	0.60-6.00	0.14-0.21	Low-----	0.0-0.5	0.43	0.49	---	---	---
StdAH:												
Stendal-----	0-8	12-26	1.30-1.55	0.60-2.00	0.22-0.24	Low-----	1.0-3.0	0.43	0.43	5	6	48
	8-40	18-34	1.35-1.55	0.60-2.00	0.20-0.22	Low-----	0.0-1.0	0.49	0.49	---	---	---
	40-60	15-34	1.35-1.55	0.60-2.00	0.20-0.22	Low-----	0.0-0.5	0.49	0.49	---	---	---

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
StfB2:												
Stinesville-----	0-9	15-26	1.20-1.65	0.60-2.00	0.17-0.26	Low-----	1.0-3.0	0.43	0.43	5	6	48
	9-46	24-30	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.49	0.49	---	---	---
	46-68	16-24	1.40-1.70	0.60-2.00	0.16-0.21	Low-----	0.0-0.5	0.49	0.49	---	---	---
	68-92	30-45	1.40-1.70	0.60-2.00	0.07-0.21	High-----	0.0-0.5	0.24	0.32	---	---	---
	92-99	45-70	1.35-1.60	0.60-2.00	0.07-0.15	High-----	0.0-0.5	0.17	0.20	---	---	---
StfC2:												
Stinesville-----	0-9	15-26	1.20-1.65	0.60-2.00	0.17-0.26	Low-----	1.0-3.0	0.43	0.43	5	6	48
	9-33	24-30	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.49	0.49	---	---	---
	33-55	16-24	1.40-1.70	0.60-2.00	0.16-0.21	Low-----	0.0-0.5	0.49	0.49	---	---	---
	55-83	30-45	1.40-1.70	0.60-2.00	0.07-0.21	High-----	0.0-0.5	0.24	0.32	---	---	---
	83-99	45-70	1.35-1.60	0.60-2.00	0.07-0.15	High-----	0.0-0.5	0.17	0.20	---	---	---
StgC2:												
Stinesville-----	0-8	15-26	1.20-1.65	0.60-2.00	0.17-0.26	Low-----	1.0-3.0	0.43	0.43	5	6	48
	8-38	24-30	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.49	0.49	---	---	---
	38-52	16-24	1.40-1.70	0.60-2.00	0.16-0.21	Low-----	0.0-0.5	0.49	0.49	---	---	---
	52-83	30-45	1.40-1.70	0.60-2.00	0.07-0.21	High-----	0.0-0.5	0.24	0.32	---	---	---
	83-99	45-70	1.35-1.60	0.60-2.00	0.07-0.15	High-----	0.0-0.5	0.17	0.20	---	---	---
Ryker-----	0-8	15-26	1.30-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.43	0.43	5	6	48
	8-38	22-32	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-1.0	0.49	0.49	---	---	---
	38-52	22-38	1.40-1.65	0.60-2.00	0.12-0.20	Moderate-	0.0-0.5	0.24	0.32	---	---	---
	52-80	40-75	1.35-1.65	0.60-2.00	0.06-0.16	High-----	0.0-0.5	0.17	0.20	---	---	---
Grayford-----	0-8	12-26	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.37	0.37	3	5	56
	8-20	22-33	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.43	0.43	---	---	---
	20-32	24-35	1.35-1.65	0.60-2.00	0.12-0.16	Moderate-	0.0-0.5	0.24	0.28	---	---	---
	32-49	42-80	1.35-1.65	0.60-2.00	0.07-0.16	High-----	0.0-0.5	0.15	0.24	---	---	---
	49-59	---	---	0.00-0.06	---	Low-----	---	---	---	---	---	---
StgD2:												
Stinesville-----	0-6	15-26	1.20-1.65	0.60-2.00	0.17-0.26	Low-----	1.0-3.0	0.43	0.43	5	6	48
	6-38	24-30	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.49	0.49	---	---	---
	38-52	16-24	1.40-1.70	0.60-2.00	0.16-0.21	Low-----	0.0-0.5	0.49	0.49	---	---	---
	52-77	30-45	1.40-1.70	0.60-2.00	0.07-0.21	High-----	0.0-0.5	0.24	0.32	---	---	---
	77-80	45-70	1.35-1.60	0.60-2.00	0.07-0.15	High-----	0.0-0.5	0.17	0.20	---	---	---
Ryker-----	0-8	15-26	1.30-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.43	0.43	5	6	48
	8-28	22-32	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-1.0	0.49	0.49	---	---	---
	28-53	22-38	1.40-1.65	0.60-2.00	0.12-0.20	Moderate-	0.0-0.5	0.24	0.32	---	---	---
	53-67	40-75	1.35-1.65	0.60-2.00	0.06-0.16	High-----	0.0-0.5	0.17	0.20	---	---	---
	67-80	---	---	0.00-0.06	---	Low-----	---	---	---	---	---	---
Grayford-----	0-4	12-26	1.20-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.37	0.37	3	5	56
	4-9	22-33	1.40-1.70	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.43	0.43	---	---	---
	9-26	24-35	1.35-1.65	0.60-2.00	0.12-0.16	Moderate-	0.0-0.5	0.24	0.28	---	---	---
	26-45	42-80	1.35-1.65	0.60-2.00	0.07-0.16	High-----	0.0-0.5	0.15	0.24	---	---	---
	45-60	---	---	0.00-0.06	---	Low-----	---	---	---	---	---	---
SupAH:												
Stonelick-----	0-12	8-18	1.25-1.50	2.00-6.00	0.11-0.15	Low-----	0.5-2.0	0.20	0.24	5	3	86
	12-70	5-18	1.30-1.55	2.00-6.00	0.08-0.17	Low-----	0.5-1.0	0.10	0.28	---	---	---
SwhG:												
Stubenville-----	0-6	14-22	1.20-1.50	0.60-2.00	0.18-0.27	Low-----	2.0-4.0	0.43	0.43	4	5	56
	6-36	24-32	1.40-1.60	0.60-2.00	0.14-0.21	Low-----	0.5-1.0	0.43	0.43	---	---	---
	36-60	4-24	1.40-1.60	0.60-2.00	0.14-0.20	Low-----	0.0-0.5	0.64	0.64	---	---	---

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
SwhG:												
Hickory-----	0-6	12-25	1.20-1.55	0.60-2.00	0.18-0.22	Low-----	2.0-4.0	0.28	0.28	5	6	48
	6-35	18-35	1.45-1.70	0.60-2.00	0.12-0.19	Moderate-	0.0-1.0	0.24	0.28	---	---	---
	35-45	15-32	1.50-1.70	0.60-2.00	0.11-0.16	Low-----	0.0-0.5	0.24	0.28	---	---	---
	45-80	15-26	1.60-1.80	0.60-2.00	0.06-0.15	Low-----	0.0-0.5	0.28	0.32	---	---	---
TadA:												
Taggart-----	0-8	12-20	1.30-1.65	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.49	0.49	5	5	56
	8-45	18-32	1.40-1.70	0.20-2.00	0.14-0.27	Moderate-	0.5-1.0	0.49	0.49	---	---	---
	45-74	20-30	1.40-1.60	0.06-0.20	0.13-0.19	Low-----	0.0-0.5	0.32	0.37	---	---	---
	74-80	10-30	1.40-1.70	0.06-0.20	0.10-0.19	Low-----	0.0-0.5	0.20	0.28	---	---	---
TahB:												
Tapawingo-----	0-2	16-26	1.40-1.65	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.43	0.49	3	6	48
	2-5	20-34	1.55-1.80	0.01-0.06	0.06-0.10	Moderate-	0.5-2.0	0.43	0.49	---	---	---
	5-27	20-34	1.65-1.80	0.01-0.06	0.06-0.10	Moderate-	0.0-1.0	0.43	0.49	---	---	---
	27-80	24-40	1.50-1.75	0.01-0.20	0.06-0.10	Moderate-	1.0-3.0	0.32	0.49	---	---	---
Nawakwa-----	0-2	16-26	1.40-1.65	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.43	0.49	3	6	48
	2-5	20-34	1.55-1.80	0.01-0.06	0.06-0.10	Moderate-	0.5-2.0	0.43	0.49	---	---	---
	5-11	20-34	1.65-1.80	0.01-0.06	0.06-0.10	Moderate-	0.0-1.0	0.43	0.49	---	---	---
	11-80	24-40	1.50-1.75	0.01-0.20	0.06-0.10	Moderate-	1.0-3.0	0.32	0.49	---	---	---
TcgG:												
Tipsaw-----	0-5	5-18	1.20-1.40	0.60-2.00	0.14-0.19	Low-----	2.0-4.0	0.28	0.49	3	5	56
	5-28	8-18	1.40-1.60	0.60-6.00	0.06-0.13	Low-----	0.0-0.5	0.28	0.55	---	---	---
	28-60	---	---	0.00-0.60	---	Low-----	---	---	---	---	---	---
Rock outcrop.												
TtaG:												
Tulip-----	0-7	12-20	1.25-1.55	0.60-2.00	0.14-0.23	Low-----	2.0-5.0	0.28	0.37	4	5	56
	7-45	18-28	1.40-1.70	0.60-2.00	0.10-0.23	Low-----	0.0-1.0	0.24	0.49	---	---	---
	45-70	32-50	1.35-1.65	0.06-0.20	0.06-0.18	High-----	0.0-0.5	0.32	0.43	---	---	---
	70-80	40-50	1.35-1.65	0.06-0.20	0.07-0.16	High-----	0.0-0.5	0.24	0.28	---	---	---
Tipsaw-----	0-5	5-18	1.20-1.40	0.60-2.00	0.14-0.19	Low-----	2.0-4.0	0.28	0.49	3	5	56
	5-28	8-18	1.40-1.60	0.60-6.00	0.06-0.13	Low-----	0.0-0.5	0.28	0.55	---	---	---
	28-60	---	---	0.00-0.60	---	Low-----	---	---	---	---	---	---
TtcE:												
Tulip-----	0-7	12-20	1.25-1.55	0.60-2.00	0.14-0.23	Low-----	2.0-5.0	0.28	0.37	4	5	56
	7-45	18-28	1.40-1.70	0.60-2.00	0.10-0.23	Low-----	0.0-1.0	0.24	0.49	---	---	---
	45-70	32-50	1.35-1.65	0.06-0								

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
VdgA:												
Vigo-----	0-8	10-18	1.20-1.65	0.60-2.00	0.17-0.26	Low-----	1.0-3.0	0.55	0.55	4	5	56
	8-22	14-26	1.35-1.70	0.20-0.60	0.17-0.26	Low-----	0.0-0.5	0.55	0.55	---	---	---
	22-46	24-32	1.40-1.70	0.20-0.60	0.14-0.21	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	46-70	20-26	1.55-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.49	0.49	---	---	---
	70-80	20-28	1.65-1.85	0.01-0.06	0.06-0.16	Moderate-	0.0-0.5	0.37	0.43	---	---	---
W:												
Water.												
WeaA:												
Wea-----	0-15	10-18	1.40-1.60	0.60-2.00	0.10-0.21	Low-----	2.0-4.0	0.15	0.15	4	3	86
	15-43	18-24	1.40-1.70	0.60-2.00	0.09-0.19	Low-----	0.0-1.0	0.10	0.15	---	---	---
	43-80	1-4	1.75-1.90	>20.00	0.02-0.05	Low-----	0.0-0.5	0.02	0.05	---	---	---
Elston-----	0-20	8-15	1.40-1.70	2.00-6.00	0.10-0.18	Low-----	1.0-3.0	0.10	0.10	5	3	86
	20-34	10-18	1.50-1.70	2.00-6.00	0.10-0.18	Low-----	0.5-1.0	0.15	0.15	---	---	---
	34-76	8-15	1.50-1.70	2.00-6.00	0.08-0.13	Low-----	0.0-0.5	0.10	0.10	---	---	---
	76-80	1-5	1.60-1.80	>20.00	0.05-0.07	Low-----	0.0-0.5	0.05	0.05	---	---	---
WeaAQ:												
Wea-----	0-15	10-18	1.40-1.60	0.60-2.00	0.10-0.21	Low-----	2.0-4.0	0.15	0.15	4	3	86
	15-43	18-24	1.40-1.70	0.60-2.00	0.09-0.19	Low-----	0.0-1.0	0.10	0.15	---	---	---
	43-80	1-4	1.75-1.90	>20.00	0.02-0.05	Low-----	0.0-0.5	0.02	0.05	---	---	---
Elston-----	0-20	8-15	1.40-1.70	2.00-6.00	0.10-0.18	Low-----	1.0-3.0	0.10	0.10	5	3	86
	20-34	10-18	1.50-1.70	2.00-6.00	0.10-0.18	Low-----	0.5-1.0	0.15	0.15	---	---	---
	34-76	8-15	1.50-1.70	2.00-6.00	0.08-0.13	Low-----	0.0-0.5	0.10	0.10	---	---	---
	76-80	1-5	1.60-1.80	>20.00	0.05-0.07	Low-----	0.0-0.5	0.05	0.05	---	---	---
WhfD2:												
Wellston-----	0-8	13-27	1.20-1.55	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.49	0.49	4	6	48
	8-30	18-35	1.40-1.65	0.60-2.00	0.14-0.21	Moderate-	0.0-1.0	0.55	0.55	---	---	---
	30-45	15-30	1.30-1.65	0.60-2.00	0.12-0.17	Low-----	0.1-0.5	0.32	0.49	---	---	---
	45-49	15-30	1.30-1.60	0.60-2.00	0.06-0.16	Low-----	0.0-0.5	0.20	0.43	---	---	---
	49-60	---	---	0.00-0.60	---	Low-----	---	---	---	---	---	---
WlmAK:												
Whitaker-----	0-16	7-18	1.30-1.50	0.60-2.00	0.16-0.21	Low-----	1.0-3.0	0.32	0.32	5	3	86
	16-50	18-33	1.40-1.60	0.60-2.00	0.15-0.19	Moderate-	0.5-1.0	0.32	0.32	---	---	---
	50-80	3-18	1.60-1.80	0.60-6.00	0.08-0.14	Low-----	0.0-0.5	0.24	0.28	---	---	---
WokAH:												
Wilbur-----	0-7	10-18	1.30-1.50	0.60-2.00	0.20-0.24	Low-----	1.0-3.0	0.43	0.43	5	5	56
	7-32	10-18	1.30-1.50	0.60-2.00	0.20-0.24	Low-----	0.5-2.0	0.55	0.55	---	---	---
	32-60	10-26	1.30-1.50	0.60-2.00	0.18-0.22	Low-----	0.5-1.0	0.49	0.49	---	---	---
WolAI:												
Wilhite-----	0-9	30-40	1.40-1.60	0.06-0.20	0.12-0.18	High-----	1.0-3.0	0.32	0.32	5	4	86
	9-38	35-50	1.40-1.60	0.06-0.20	0.08-0.18	High-----	0.0-2.0	0.37	0.37	---	---	---
	38-60	35-50	1.40-1.60	0.01-0.06	0.08-0.18	High-----	0.0-1.0	0.37	0.37	---	---	---
WomAH:												
Wilhite-----	0-9	30-40	1.40-1.60	0.20-0.60	0.18-0.24	Moderate-	1.0-3.0	0.32	0.37	5	7	38
	9-38	35-50	1.40-1.60	0.06-0.20	0.08-0.18	High-----	0.0-2.0	0.37	0.37	---	---	---
	38-60	35-50	1.40-1.60	0.01-0.06	0.08-0.18	High-----	0.0-1.0	0.37	0.37	---	---	---
WprAQ:												
Wirt-----	0-8	10-18	1.30-1.55	0.60-2.00	0.19-0.24	Low-----	1.0-3.0	0.37	0.37	5	5	56
	8-44	7-18	1.40-1.55	0.60-2.00	0.11-0.20	Low-----	0.0-1.0	0.37	0.37	---	---	---
	44-60	15-28	1.45-1.60	0.60-6.00	0.07-0.19	Low-----	0.0-0.5	0.24	0.37	---	---	---

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
WpuAK:												
Wirt-----	0-8	10-18	1.30-1.55	0.60-2.00	0.19-0.24	Low-----	1.0-3.0	0.43	0.43	5	5	56
	8-38	7-18	1.40-1.55	0.60-2.00	0.11-0.20	Low-----	0.0-1.0	0.32	0.37	---	---	---
	38-60	4-18	1.45-1.60	0.60-6.00	0.07-0.19	Low-----	0.0-0.5	0.24	0.37	---	---	---
WpuAV:												
Wirt-----	0-8	10-18	1.30-1.55	0.60-2.00	0.19-0.24	Low-----	1.0-3.0	0.43	0.43	5	5	56
	8-38	7-18	1.40-1.55	0.60-2.00	0.11-0.20	Low-----	0.0-1.0	0.32	0.37	---	---	---
	38-60	4-18	1.45-1.60	0.60-6.00	0.07-0.19	Low-----	0.0-0.5	0.24	0.37	---	---	---
WpyBJ:												
Wirt-----	0-21	18-26	1.30-1.55	0.60-2.00	0.20-0.24	Low-----	1.0-3.0	0.43	0.43	5	6	48
	21-54	7-18	1.40-1.55	0.60-2.00	0.11-0.20	Low-----	0.0-1.0	0.32	0.37	---	---	---
	54-60	8-18	1.45-1.60	0.60-6.00	0.10-0.19	Low-----	0.0-0.5	0.24	0.37	---	---	---
Pekin-----	0-9	10-22	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	4	5	56
	9-27	18-30	1.40-1.60	0.60-2.00	0.18-0.22	Low-----	0.5-1.0	0.55	0.55	---	---	---
	27-44	20-35	1.70-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	44-60	10-30	1.40-1.60	0.20-0.60	0.06-0.08	Low-----	0.0-0.5	0.49	0.55	---	---	---
ZamB2:												
Zanesville-----	0-8	12-26	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	4	5	56
	8-28	18-32	1.40-1.60	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	28-55	18-32	1.60-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	55-68	20-50	1.40-1.70	0.06-0.20	0.06-0.08	Moderate-	0.0-0.5	0.24	0.32	---	---	---
	68-80	---	---	0.00-0.20	---	Low-----	---	---	---	---	---	---
ZamC2:												
Zanesville-----	0-8	12-26	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	4	5	56
	8-26	18-32	1.40-1.60	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	26-50	18-32	1.60-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	50-68	20-50	1.40-1.70	0.06-0.20	0.06-0.08	Moderate-	0.0-0.5	0.24	0.32	---	---	---
	68-80	---	---	0.00-0.20	---	Low-----	---	---	---	---	---	---
ZamC3:												
Zanesville-----	0-6	12-26	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.49	0.49	3	5	56
	6-18	18-32	1.40-1.60	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	18-43	18-32	1.60-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	43-68	20-50	1.40-1.70	0.06-0.20	0.06-0.08	Moderate-	0.0-0.5	0.24	0.32	---	---	---
	68-80	---	---	0.00-0.20	---	Low-----	---	---	---	---	---	---
ZamD2:												
Zanesville-----	0-6	12-26	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	1.0-3.0	0.55	0.55	4	5	56
	6-22	18-32	1.40-1.60	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	22-50	18-32	1.60-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	50-68	20-50	1.40-1.70	0.06-0.20	0.06-0.08	Moderate-	0.0-0.5	0.24	0.32	---	---	---
	68-80	---	---	0.00-0.20	---	Low-----	---	---	---	---	---	---
ZamD5:												
Zanesville-----	0-2	12-26	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.49	0.49	2	5	56
	2-13	18-32	1.40-1.60	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	13-35	18-32	1.60-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	35-60	20-50	1.40-1.70	0.06-0.20	0.06-0.08	Moderate-	0.0-0.5	0.24	0.32	---	---	---
	60-72	---	---	0.00-0.20	---	Low-----	---	---	---	---	---	---

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
ZapD3:												
Zanesville-----	0-6	12-26	1.30-1.60	0.60-2.00	0.18-0.24	Low-----	0.5-2.0	0.49	0.49	3	5	56
	6-16	18-32	1.40-1.60	0.60-2.00	0.14-0.21	Moderate-	0.0-0.5	0.55	0.55	---	---	---
	16-36	18-32	1.60-1.80	0.01-0.06	0.06-0.08	Low-----	0.0-0.5	0.55	0.55	---	---	---
	36-68	20-50	1.40-1.70	0.06-0.20	0.06-0.08	Moderate-	0.0-0.5	0.24	0.32	---	---	---
	68-80	---	---	0.00-0.20	---	Low-----	---	---	---	---	---	---
Tulip-----	0-5	12-20	1.25-1.55	0.60-2.00	0.14-0.23	Low-----	0.5-2.0	0.43	0.49	3	5	56
	5-26	18-28	1.40-1.70	0.60-2.00	0.10-0.23	Low-----	0.0-1.0	0.24	0.49	---	---	---
	26-60	32-50	1.35-1.65	0.06-0.20	0.06-0.18	High-----	0.0-0.5	0.32	0.43	---	---	---
	60-80	40-50	1.35-1.65	0.06-0.20	0.07-0.16	High-----	0.0-0.5	0.24	0.28	---	---	---

Table 19.--Chemical Properties of the Soils

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
AbgAU:				
Adrian-----	0-40	125-200	5.6-7.3	---
	40-60	1.0-2.0	5.6-7.3	---
AfeC:				
Alvin-----	0-9	4.0-8.0	5.1-7.3	---
	9-12	6.0-10.0	5.1-7.3	---
	12-28	9.0-14.0	5.1-7.3	---
	28-80	2.0-5.0	6.1-8.4	0-25
Bloomfield-----	0-8	4.0-10.0	5.6-7.3	---
	8-16	1.0-7.0	5.6-7.3	---
	16-70	3.0-8.0	5.6-7.3	---
	70-80	3.0-8.0	6.1-8.4	0-25
AfeD:				
Alvin-----	0-9	4.0-8.0	5.1-7.3	---
	9-12	6.0-10.0	5.1-7.3	---
	12-28	9.0-14.0	5.1-7.3	---
	28-80	2.0-5.0	6.1-8.4	0-25
Bloomfield-----	0-8	4.0-10.0	5.6-7.3	---
	8-35	1.0-7.0	5.6-7.3	---
	35-70	3.0-8.0	5.1-7.3	---
	70-80	3.0-8.0	6.1-8.4	0-25
AffE:				
Alvin-----	0-9	4.0-8.0	5.1-7.3	---
	9-12	6.0-10.0	5.1-7.3	---
	12-28	9.0-14.0	5.1-7.3	---
	28-80	2.0-5.0	6.1-8.4	0-25
Bloomfield-----	0-8	4.0-10.0	5.6-7.3	---
	8-35	1.0-7.0	5.6-7.3	---
	35-70	3.0-8.0	5.6-7.3	---
	70-80	3.0-8.0	6.1-8.4	0-25
Princeton-----	0-8	5.0-10.0	5.1-7.3	---
	8-41	7.0-15.0	4.5-7.3	---
	41-60	2.0-5.0	4.5-7.3	---
	60-80	1.0-7.0	5.1-8.4	0-25
AfsB:				
Alvin-----	0-9	4.0-11.0	5.1-7.3	---
	9-12	6.0-10.0	5.1-7.3	---
	12-28	9.0-14.0	5.1-7.3	---
	28-80	2.0-5.0	6.1-8.4	0-25
Princeton-----	0-8	5.0-10.0	5.1-7.3	---
	8-41	7.0-15.0	4.5-7.3	---
	41-60	2.0-5.0	4.5-7.3	---
	60-80	1.0-7.0	5.1-8.4	0-25
AfsC:				
Alvin-----	0-9	4.0-11.0	5.1-7.3	---
	9-12	6.0-10.0	5.1-7.3	---
	12-28	9.0-14.0	5.1-7.3	---
	28-80	2.0-5.0	6.1-8.4	0-25

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
AfsC:				
Princeton-----	0-8	5.0-10.0	5.1-7.3	---
	8-41	7.0-15.0	4.5-7.3	---
	41-60	2.0-5.0	4.5-7.3	---
	60-80	1.0-7.0	5.1-8.4	0-25
AftD:				
Alvin-----	0-9	4.0-11.0	5.1-7.3	---
	9-12	6.0-10.0	5.1-7.3	---
	12-28	9.0-14.0	5.1-7.3	---
	28-80	2.0-5.0	6.1-8.4	0-25
Princeton-----	0-8	5.0-10.0	5.1-7.3	---
	8-41	7.0-15.0	4.5-7.3	---
	41-60	2.0-5.0	4.5-7.3	---
	60-80	1.0-7.0	5.1-8.4	0-25
AhrAK:				
Armiesburg-----	0-16	14.0-29.0	6.1-7.8	---
	16-38	13.0-23.0	6.1-7.3	---
	38-60	10.0-20.0	6.1-7.8	0-10
AkeB2:				
Arney-----	0-9	4.0-17.0	4.5-7.3	---
	9-36	7.0-20.0	4.5-5.5	---
	36-60	7.0-13.0	4.5-5.5	---
	60-80	5.0-24.0	4.5-6.0	---
AloB2:				
Ava-----	0-8	4.0-17.0	4.5-7.3	---
	8-27	7.0-21.0	4.5-5.5	---
	27-59	7.0-19.0	4.5-5.5	---
	59-80	5.0-19.0	4.5-6.0	---
AmkA:				
Ayrshire-----	0-8	4.0-12.0	5.6-7.3	---
	8-14	4.0-12.0	5.6-7.3	---
	14-35	4.0-22.0	5.1-6.5	---
	35-55	4.0-11.0	5.1-7.3	---
	55-60	1.0-6.0	6.6-8.4	0-10
BdxAV:				
Belknap-----	0-13	5.0-12.0	4.5-7.3	---
	13-47	5.0-12.0	4.5-5.5	---
	47-60	5.0-15.0	4.5-6.0	---
BgeAH:				
Birds-----	0-8	9.0-18.0	5.6-7.3	---
	8-43	9.0-18.0	5.6-7.8	---
	43-60	5.0-15.0	5.6-7.8	---
BodAV:				
Bonnie-----	0-9	5.0-16.0	4.5-7.3	---
	9-47	4.0-12.0	4.5-5.5	---
	47-60	11.0-20.0	4.5-6.5	---
CkkB2:				
Cincinnati-----	0-8	7.0-18.0	4.5-7.3	---
	8-29	7.0-15.0	4.5-5.5	---
	29-52	6.0-15.0	4.5-6.0	---
	52-80	8.0-22.0	4.5-6.5	---

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
CkkC2:				
Cincinnati-----	0-8	4.0-15.0	4.5-7.3	---
	8-25	7.0-15.0	4.5-5.5	---
	25-47	6.0-15.0	4.5-6.0	---
	47-80	8.0-22.0	4.5-6.5	---
CkkC3:				
Cincinnati-----	0-8	4.0-15.0	4.5-7.3	---
	8-18	7.0-15.0	4.5-5.5	---
	18-46	6.0-15.0	4.5-6.0	---
	46-80	8.0-22.0	4.5-6.5	---
CkkD2:				
Cincinnati-----	0-6	4.0-15.0	4.5-7.3	---
	6-24	7.0-15.0	4.5-5.5	---
	24-32	6.0-15.0	4.5-6.0	---
	32-80	8.0-22.0	4.5-6.5	---
CkkD3:				
Cincinnati-----	0-6	4.0-15.0	4.5-7.3	---
	6-14	7.0-15.0	4.5-5.5	---
	14-29	6.0-15.0	4.5-6.0	---
	29-80	8.0-22.0	4.5-6.5	---
CspC2:				
Crider-----	0-7	4.0-15.0	4.5-7.3	---
	7-43	10.0-16.0	4.5-6.0	---
	43-80	15.0-45.0	4.5-7.3	---
CspC3:				
Crider-----	0-7	4.0-15.0	5.1-7.3	---
	7-30	10.0-16.0	4.5-6.0	---
	30-66	15.0-45.0	4.5-7.3	---
DfnA:				
Dubois-----	0-8	5.0-16.0	4.5-7.3	---
	8-18	4.0-12.0	4.5-6.0	---
	18-30	4.0-17.0	3.5-5.0	---
	30-65	4.0-16.0	3.5-5.5	---
	65-80	4.0-20.0	5.1-7.3	---
EaaD2:				
Ebal-----	0-8	4.0-12.0	4.5-7.3	---
	8-13	7.0-15.0	4.5-5.5	---
	13-21	14.0-28.0	3.5-6.0	---
	21-61	21.0-38.0	4.5-7.3	---
	61-80	---	---	---
GaaE2:				
Gallimore-----	0-4	5.0-19.0	4.5-7.3	---
	4-35	3.0-10.0	4.5-5.5	---
	35-48	2.0-10.0	4.5-5.5	---
	48-80	0.0-6.0	4.5-6.0	---
GabG:				
Gallimore-----	0-9	5.0-19.0	4.5-7.3	---
	9-29	3.0-10.0	4.5-5.5	---
	29-54	2.0-10.0	4.5-5.5	---
	54-80	0.0-6.0	4.5-6.0	---

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
GabG:				
Chetwynd-----	0-12	4.0-17.0	4.5-7.3	---
	12-39	2.0-16.0	4.5-5.5	---
	39-56	2.0-15.0	4.5-5.5	---
	56-80	1.0-10.0	4.5-6.0	---
GblAH:				
Gessie-----	0-10	9.0-22.0	7.4-8.4	5-30
	10-43	8.0-22.0	7.4-8.4	5-30
	43-60	3.0-14.0	7.4-8.4	10-30
GmcD3:				
Grayford-----	0-6	5.0-17.0	4.5-7.3	---
	6-23	10.0-20.0	4.5-7.3	---
	23-35	6.0-12.0	4.5-5.5	---
	35-51	14.0-35.0	5.1-7.3	---
	51-60	---	---	---
GmcE2:				
Grayford-----	0-5	5.0-17.0	4.5-7.3	---
	5-10	10.0-20.0	4.5-7.3	---
	10-36	6.0-12.0	4.5-5.5	---
	36-51	14.0-35.0	5.1-7.3	---
	51-60	---	---	---
GmhD2:				
Grayford-----	0-7	5.0-17.0	4.5-7.3	---
	7-27	10.0-20.0	4.5-7.3	---
	27-36	6.0-12.0	4.5-5.5	---
	36-57	14.0-35.0	5.1-7.3	---
	57-60	---	---	---
Ryker-----	0-8	4.0-17.0	4.5-7.3	---
	8-28	3.0-20.0	4.5-7.3	---
	28-53	5.0-18.0	4.5-5.5	---
	53-67	13.0-45.0	4.5-7.3	---
GmpE2:				
Greybrook-----	0-7	8.0-15.0	4.5-7.3	---
	7-18	8.0-12.0	4.5-7.3	---
	18-59	7.0-20.0	4.5-7.3	---
	59-80	12.0-20.0	6.6-7.8	0-20
GmpF:				
Greybrook-----	0-5	8.0-15.0	4.5-7.3	---
	5-15	8.0-12.0	4.5-7.3	---
	15-62	7.0-20.0	4.5-7.3	---
	62-80	12.0-20.0	6.6-7.8	0-20
HarD2:				
Haggatt-----	0-5	6.0-20.0	4.5-7.3	---
	5-16	8.0-20.0	4.5-7.3	---
	16-44	22.0-48.0	4.5-7.3	---
	44-60	---	---	---
HarD3:				
Haggatt-----	0-4	6.0-20.0	4.5-7.3	---
	4-16	8.0-20.0	4.5-7.3	---
	16-44	22.0-48.0	4.5-7.3	---
	44-60	---	---	---

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
HasE2:				
Haggatt-----	0-5	6.0-20.0	4.5-7.3	---
	5-16	8.0-20.0	4.5-7.3	---
	16-44	22.0-48.0	4.5-7.3	---
	44-60	---	---	---
Caneyville-----	0-8	4.0-15.0	5.1-7.3	---
	8-14	10.0-20.0	5.1-7.3	---
	14-33	17.0-45.0	5.1-7.3	---
	33-40	---	---	---
HccA:				
Haubstadt-----	0-8	5.0-15.0	4.5-7.3	---
	8-34	8.0-15.0	4.5-5.5	---
	34-61	8.0-15.0	4.5-5.5	---
	61-80	7.0-16.0	4.5-7.3	---
HccB2:				
Haubstadt-----	0-7	5.0-15.0	4.5-7.3	---
	7-32	8.0-15.0	4.5-5.5	---
	32-61	8.0-15.0	4.5-5.5	---
	61-80	7.0-16.0	4.5-7.3	---
HccC3:				
Haubstadt-----	0-7	5.0-15.0	4.5-7.3	---
	7-18	8.0-15.0	4.5-5.5	---
	18-42	8.0-15.0	4.5-5.5	---
	42-80	7.0-16.0	4.5-7.3	---
HcgAH:				
Haymond-----	0-10	4.0-15.0	5.6-7.3	---
	10-44	10.0-16.0	5.6-7.3	---
	44-60	3.0-16.0	6.1-7.8	---
HchA:				
Haymond-----	0-7	4.0-15.0	5.6-7.3	---
	7-33	4.0-15.0	5.6-7.3	---
	33-60	4.0-15.0	5.6-7.3	---
HefG:				
Hickory-----	0-6	8.0-19.0	4.5-6.0	---
	6-35	5.0-22.0	4.5-7.3	---
	35-45	8.0-20.0	6.1-8.4	0-15
	45-80	5.0-15.0	7.4-8.4	0-25
Held2:				
Hickory-----	0-6	8.0-19.0	4.5-7.3	---
	6-70	5.0-22.0	4.5-6.0	---
	70-80	8.0-20.0	6.1-7.3	---
Stinesville-----	0-7	8.0-20.0	4.5-7.3	---
	7-46	8.0-15.0	4.5-7.3	---
	46-75	5.0-12.0	4.5-5.5	---
	75-80	8.0-18.0	4.5-6.0	---
HeoE:				
Hickory-----	0-11	8.0-19.0	4.5-6.0	---
	11-70	5.0-22.0	4.5-6.0	---
	70-80	8.0-20.0	6.1-7.3	---

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
HeoE3:				
Hickory-----	0-4	8.0-19.0	4.5-7.3	---
	4-55	5.0-22.0	4.5-7.3	---
	55-80	8.0-20.0	6.1-8.4	0-15
HeoG:				
Hickory-----	0-9	8.0-19.0	4.5-6.0	---
	9-70	5.0-22.0	4.5-7.3	---
	70-80	8.0-20.0	6.1-8.4	0-15
HepG:				
Hickory-----	0-9	8.0-19.0	4.5-6.0	---
	9-59	5.0-22.0	4.5-6.0	---
	59-80	8.0-20.0	6.1-7.3	---
Adyeville-----	0-4	3.0-15.0	3.5-7.3	---
	4-25	3.0-10.0	3.5-5.5	---
	25-60	---	---	---
HesG:				
Hickory-----	0-6	8.0-19.0	4.5-6.0	---
	6-35	5.0-22.0	4.5-7.3	---
	35-45	8.0-20.0	6.1-8.4	0-15
	45-80	5.0-12.0	7.4-8.4	0-25
Chetwynd-----	0-10	4.0-17.0	4.5-7.3	---
	10-35	2.0-16.0	4.5-7.3	---
	35-58	2.0-15.0	4.5-7.3	---
	58-80	1.0-10.0	5.1-7.3	---
HeuE:				
Hickory-----	0-9	8.0-19.0	4.5-6.0	---
	9-68	5.0-22.0	4.5-6.0	---
	68-80	8.0-20.0	6.1-7.3	---
Wellston-----	0-4	7.0-15.0	4.5-6.0	---
	4-28	6.0-16.0	4.5-5.5	---
	28-44	6.0-22.0	4.5-5.5	---
	44-52	6.0-15.0	4.5-5.5	---
	52-60	---	---	---
HeuF:				
Hickory-----	0-9	8.0-19.0	4.5-6.0	---
	9-60	5.0-22.0	4.5-6.0	---
	60-80	8.0-20.0	6.1-7.3	---
Wellston-----	0-3	7.0-15.0	4.5-6.0	---
	3-22	12.0-20.0	4.5-5.5	---
	22-32	6.0-22.0	4.5-5.5	---
	32-41	6.0-15.0	4.5-5.5	---
	41-60	---	---	---
HkaB:				
Hollybrook-----	0-8	8.0-15.0	5.6-7.3	---
	8-23	8.0-18.0	5.1-7.3	---
	23-54	8.0-18.0	5.1-7.3	---
	54-80	10.0-25.0	6.1-7.3	---
HleAV:				
Holton-----	0-14	5.0-12.0	5.6-7.3	---
	14-41	3.0-9.0	5.1-7.3	---
	41-60	3.0-9.0	6.1-7.3	---

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
HnoA:				
Hoosierville----	0-13	6.0-15.0	5.1-7.3	---
	13-40	10.0-20.0	4.5-6.0	---
	40-72	8.0-15.0	4.5-6.0	---
	72-80	10.0-20.0	5.1-6.5	---
LnfA:				
Lieber-----	0-9	4.0-17.0	4.5-7.3	---
	9-19	3.0-13.0	4.5-6.5	---
	19-34	7.0-20.0	4.5-6.5	---
	34-57	7.0-15.0	4.5-6.0	---
	57-80	8.0-24.0	5.6-6.5	---
LnfB:				
Lieber-----	0-9	4.0-17.0	4.5-7.3	---
	9-19	3.0-13.0	4.5-6.5	---
	19-34	7.0-20.0	4.5-6.5	---
	34-57	7.0-15.0	4.5-6.0	---
	57-80	8.0-24.0	5.6-6.5	---
MecA:				
Martinsville----	0-8	5.0-16.0	5.1-7.3	---
	8-17	6.0-17.0	5.1-7.3	---
	17-35	8.0-17.0	5.1-7.3	---
	35-53	2.0-12.0	5.6-7.8	0-10
	53-60	1.0-10.0	7.4-8.4	10-40
MecAQ:				
Martinsville----	0-9	5.0-16.0	5.1-7.3	---
	9-17	6.0-17.0	5.1-7.3	---
	17-58	2.0-17.0	5.1-7.8	0-10
	58-80	1.0-10.0	7.4-8.4	10-40
MecB:				
Martinsville----	0-8	5.0-16.0	5.1-7.3	---
	8-17	6.0-17.0	5.1-7.3	---
	17-35	8.0-17.0	5.1-7.3	---
	35-53	2.0-12.0	5.6-7.8	0-10
	53-60	1.0-10.0	7.4-8.4	10-40
MhhAH:				
McAdoo-----	0-10	10.0-15.0	6.6-7.8	0-5
	10-48	10.0-19.0	6.6-7.8	0-10
	48-60	5.0-15.0	6.6-8.4	0-10
MhhAK:				
McAdoo-----	0-10	10.0-15.0	6.6-7.8	0-5
	10-48	10.0-19.0	6.6-7.8	0-10
	48-60	5.0-15.0	6.6-8.4	0-10
MhuA:				
McGary-----	0-11	5.0-14.0	5.6-7.3	---
	11-42	10.0-24.0	4.5-7.8	0-15
	42-50	16.0-24.0	6.6-8.4	5-30
	50-60	10.0-18.0	7.4-8.4	10-40
MrcG:				
Minnehaha-----	0-3	15.0-25.0	5.6-7.3	---
	3-60	10.0-16.0	5.6-8.4	0-5

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
MsvA:				
Montgomery-----	0-15	20.0-36.0	6.1-7.3	---
	15-24	20.0-35.0	6.1-7.8	0-5
	24-48	20.0-35.0	7.4-8.4	0-25
	48-60	18.0-30.0	7.4-8.4	20-35
MvrAH:				
Moundhaven-----	0-14	2.0-10.0	7.4-8.4	5-25
	14-60	0.0-4.0	7.4-8.4	5-25
NbhAH:				
Newark-----	0-11	10.0-22.0	5.6-7.3	---
	11-32	10.0-20.0	5.6-7.8	---
	32-60	8.0-20.0	5.6-7.8	---
OfaAV:				
Oldenburg-----	0-9	4.0-12.0	5.1-7.3	---
	9-39	4.0-12.0	5.1-7.3	---
	39-60	2.0-10.0	5.6-7.3	---
OfcAV:				
Oldenburg-----	0-10	4.0-10.0	5.6-7.3	---
	10-36	4.0-10.0	6.1-7.3	---
	36-60	2.0-8.0	6.1-7.3	---
OfeB:				
Olephant-----	0-8	5.0-12.0	4.5-7.3	---
	8-30	5.0-15.0	4.5-7.3	---
	30-64	5.0-15.0	4.5-5.5	---
	64-80	10.0-20.0	4.5-6.0	---
OmkC2:				
Otwell-----	0-8	6.0-15.0	4.5-7.3	---
	8-23	8.0-15.0	4.5-5.5	---
	23-48	7.0-15.0	4.5-5.5	---
	48-80	8.0-15.0	5.1-7.3	---
OmkC3:				
Otwell-----	0-8	6.0-15.0	4.5-7.3	---
	8-17	8.0-15.0	4.5-5.5	---
	17-42	7.0-15.0	4.5-5.5	---
	42-80	8.0-15.0	5.1-7.3	---
OmkD3:				
Otwell-----	0-4	6.0-15.0	4.5-7.3	---
	4-17	8.0-15.0	4.5-5.5	---
	17-32	7.0-15.0	4.5-5.5	---
	32-80	8.0-15.0	5.1-7.3	---
PbbC2:				
Parke-----	0-6	6.0-15.0	5.1-7.3	---
	6-26	8.0-15.0	4.5-6.0	---
	26-35	6.0-10.0	4.5-6.0	---
	35-80	2.0-10.0	4.5-5.5	---
PbbC3:				
Parke-----	0-6	6.0-15.0	5.1-7.3	---
	6-22	8.0-15.0	4.5-6.0	---
	22-30	6.0-10.0	4.5-6.0	---
	30-80	2.0-10.0	4.5-5.5	---

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
PbbD2:				
Parke-----	0-6	6.0-15.0	5.1-7.3	---
	6-26	8.0-15.0	4.5-6.0	---
	26-35	6.0-10.0	4.5-6.0	---
	35-80	2.0-10.0	4.5-5.5	---
PbbD3:				
Parke-----	0-6	6.0-15.0	5.1-7.3	---
	6-22	8.0-15.0	4.5-6.0	---
	22-30	6.0-10.0	4.5-6.0	---
	30-80	2.0-10.0	4.5-5.5	---
PcnA:				
Patrickburg----	0-11	8.0-15.0	4.5-7.3	---
	11-25	8.0-15.0	4.5-5.5	---
	25-55	8.0-15.0	4.5-5.5	---
	55-76	8.0-12.0	4.5-5.5	---
	76-80	---	---	---
PcrAQ:				
Pekin-----	0-9	6.0-16.0	4.5-7.3	---
	9-27	8.0-15.0	4.5-7.3	---
	27-50	8.0-16.0	3.5-5.5	---
	50-60	5.0-15.0	4.5-7.3	---
PcrB2:				
Pekin-----	0-9	6.0-16.0	4.5-7.3	---
	9-27	8.0-15.0	4.5-7.3	---
	27-44	8.0-16.0	3.5-5.5	---
	44-60	5.0-15.0	4.5-7.3	---
PcrC2:				
Pekin-----	0-9	6.0-16.0	4.5-7.3	---
	9-27	8.0-15.0	4.5-7.3	---
	27-44	8.0-16.0	3.5-5.5	---
	44-60	5.0-15.0	4.5-7.3	---
PhaA:				
Peoga-----	0-8	4.0-10.0	4.5-7.3	---
	8-19	4.0-8.0	3.5-5.5	---
	19-36	10.0-15.0	3.5-5.5	---
	36-76	10.0-15.0	3.5-6.0	---
	76-80	10.0-15.0	5.1-7.3	---
PhaAP:				
Peoga-----	0-9	4.0-10.0	4.5-7.3	---
	9-52	10.0-15.0	4.5-5.5	---
	52-70	10.0-15.0	4.5-6.0	---
	70-80	10.0-15.0	5.1-7.3	---
PlcAV:				
Piankeshaw-----	0-6	10.0-15.0	5.6-7.3	---
	6-26	7.0-16.0	5.6-7.3	---
	26-48	4.0-12.0	5.6-7.3	---
	48-60	4.0-12.0	5.6-7.3	---
PlfA:				
Pike-----	0-9	6.0-15.0	4.5-7.3	---
	9-39	8.0-15.0	4.5-5.5	---
	39-53	6.0-10.0	4.5-5.5	---
	53-80	2.0-10.0	4.5-5.5	---

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
PlfB2:				
Pike-----	0-9	6.0-15.0	4.5-7.3	---
	9-39	8.0-15.0	4.5-5.5	---
	39-53	6.0-10.0	4.5-5.5	---
	53-80	2.0-10.0	4.5-5.5	---
Pml:				
Pits, quarry.				
PrwAV:				
Pope-----	0-8	3.0-12.0	4.5-7.3	---
	8-32	3.0-10.0	4.5-5.5	---
	32-60	3.0-10.0	4.5-5.5	---
PryB:				
Potawatomi-----	0-9	4.0-17.0	4.5-7.3	---
	9-28	10.0-20.0	4.5-6.5	---
	28-46	7.0-15.0	4.5-5.5	---
	46-77	6.0-13.0	4.5-6.0	---
	77-90	4.0-16.0	4.5-6.0	---
PsaD3:				
Pottersville----	0-5	9.0-17.0	5.6-7.3	---
	5-20	10.0-20.0	4.5-7.3	---
	20-44	12.0-25.0	5.1-8.4	0-25
	44-60	2.0-24.0	7.4-8.4	15-40
PsaG:				
Pottersville----	0-7	9.0-17.0	5.6-7.3	---
	7-24	10.0-20.0	4.5-7.3	---
	24-46	12.0-25.0	5.1-8.4	0-25
	46-60	2.0-24.0	7.4-8.4	15-40
PsbF:				
Pottersville----	0-7	9.0-17.0	5.6-7.3	---
	7-24	10.0-20.0	4.5-7.3	---
	24-46	12.0-25.0	5.1-8.4	0-25
	46-60	2.0-24.0	7.4-8.4	15-40
Rnn:				
Riverwash.				
RpzG:				
Romona-----	0-6	30.0-40.0	6.1-7.3	---
	6-9	30.0-40.0	6.1-7.3	---
	9-19	30.0-40.0	6.1-7.3	---
	19-27	30.0-40.0	6.1-7.8	0-10
	27-37	---	---	---
Corydon-----	0-5	20.0-40.0	6.1-7.8	---
	5-17	30.0-40.0	6.1-7.8	0-10
	17-27	---	---	---
Rock outcrop.				
RtcC3:				
Ryker-----	0-6	4.0-17.0	4.5-7.3	---
	6-38	3.0-20.0	4.5-7.3	---
	38-67	5.0-18.0	4.5-5.5	---
	67-80	13.0-45.0	4.5-7.3	---

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
SfoA:				
Shakamak-----	0-10	9.0-15.0	4.5-7.3	---
	10-28	8.0-15.0	4.5-7.3	---
	28-57	8.0-15.0	4.5-5.5	---
	57-80	8.0-15.0	4.5-6.5	---
SfyB2:				
Shircliff-----	0-8	5.0-14.0	5.1-7.3	---
	8-19	10.0-20.0	4.5-6.0	---
	19-43	16.0-24.0	4.5-7.8	0-5
	43-80	10.0-18.0	7.8-8.4	10-45
SfyC2:				
Shircliff-----	0-6	5.0-14.0	5.1-7.3	---
	6-19	10.0-20.0	4.5-6.0	---
	19-43	16.0-24.0	4.5-7.8	0-5
	43-80	10.0-18.0	7.8-8.4	10-45
SneC2:				
Solsberry-----	0-7	5.0-12.0	4.5-7.3	---
	7-21	6.0-12.0	4.5-6.5	---
	21-27	6.0-12.0	4.5-5.5	---
	27-39	6.0-12.0	4.5-5.5	---
	39-80	12.0-22.0	4.5-6.5	---
SneC3:				
Solsberry-----	0-6	5.0-12.0	4.5-7.3	---
	6-17	6.0-12.0	4.5-6.5	---
	17-23	6.0-12.0	4.5-5.5	---
	23-39	6.0-12.0	4.5-5.5	---
	39-80	12.0-22.0	4.5-6.5	---
SneD2:				
Solsberry-----	0-7	5.0-12.0	4.5-7.3	---
	7-21	6.0-12.0	4.5-6.5	---
	21-27	6.0-12.0	4.5-5.5	---
	27-39	6.0-12.0	4.5-5.5	---
	39-80	12.0-22.0	4.5-6.5	---
SneD3:				
Solsberry-----	0-6	5.0-12.0	4.5-7.3	---
	6-17	6.0-12.0	4.5-6.5	---
	17-23	6.0-12.0	4.5-5.5	---
	23-39	6.0-12.0	4.5-5.5	---
	39-80	12.0-22.0	4.5-6.5	---
SneD5:				
Solsberry-----	0-2	5.0-12.0	4.5-7.3	---
	2-9	6.0-12.0	4.5-6.5	---
	9-18	6.0-12.0	4.5-5.5	---
	18-42	6.0-12.0	4.5-5.5	---
	42-80	12.0-22.0	4.5-6.5	---
StaAV:				
Steff-----	0-11	4.0-15.0	4.5-7.3	---
	11-41	4.0-11.0	4.5-5.5	---
	41-60	4.0-15.0	4.5-5.5	---
StdAH:				
Stendal-----	0-8	5.0-15.0	4.5-7.3	---
	8-40	5.0-15.0	4.5-5.5	---
	40-60	5.0-15.0	4.5-5.5	---

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
StfB2:				
Stinesville-----	0-9	8.0-20.0	4.5-7.3	---
	9-46	8.0-15.0	4.5-7.3	---
	46-68	5.0-12.0	4.5-5.5	---
	68-92	8.0-18.0	4.5-6.0	---
	92-99	10.0-32.0	5.1-7.3	---
StfC2:				
Stinesville-----	0-9	8.0-20.0	4.5-7.3	---
	9-33	8.0-15.0	4.5-7.3	---
	33-55	5.0-12.0	4.5-5.5	---
	55-83	8.0-18.0	4.5-6.0	---
	83-99	10.0-32.0	5.1-7.3	---
StgC2:				
Stinesville-----	0-8	8.0-20.0	4.5-7.3	---
	8-38	8.0-15.0	4.5-7.3	---
	38-52	5.0-12.0	4.5-5.5	---
	52-83	8.0-18.0	4.5-6.0	---
	83-99	10.0-32.0	5.1-7.3	---
Ryker-----	0-8	4.0-17.0	4.5-7.3	---
	8-38	3.0-20.0	4.5-7.3	---
	38-52	5.0-18.0	4.5-5.5	---
	52-80	13.0-45.0	4.5-7.3	---
Grayford-----	0-8	5.0-17.0	4.5-7.3	---
	8-20	10.0-20.0	4.5-7.3	---
	20-32	6.0-12.0	4.5-5.5	---
	32-49	14.0-35.0	5.1-7.3	---
	49-59	---	---	---
StgD2:				
Stinesville-----	0-6	8.0-20.0	4.5-7.3	---
	6-38	8.0-15.0	4.5-7.3	---
	38-52	5.0-12.0	4.5-5.5	---
	52-77	8.0-18.0	4.5-6.0	---
	77-80	10.0-32.0	5.1-7.3	---
Ryker-----	0-8	4.0-17.0	4.5-7.3	---
	8-28	3.0-20.0	4.5-7.3	---
	28-53	5.0-18.0	4.5-5.5	---
	53-67	13.0-45.0	4.5-7.3	---
	67-80	---	---	---
Grayford-----	0-4	5.0-17.0	4.5-7.3	---
	4-9	10.0-20.0	4.5-7.3	---
	9-26	6.0-12.0	4.5-5.5	---
	26-45	14.0-35.0	5.1-7.3	---
	45-60	---	---	---
SupAH:				
Stonelick-----	0-12	4.0-12.0	7.4-8.4	2-15
	12-70	2.0-10.0	7.4-8.4	2-25
SwhG:				
Stubenville-----	0-6	8.0-18.0	4.5-6.0	---
	6-36	10.0-16.0	4.5-6.0	---
	36-60	2.0-6.0	7.4-8.4	20-35

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
SwhG:				
Hickory-----	0-6	8.0-19.0	4.5-6.0	---
	6-35	5.0-22.0	4.5-7.3	---
	35-45	8.0-20.0	6.1-8.4	0-15
	45-80	5.0-12.0	7.4-8.4	0-25
TadA:				
Taggart-----	0-8	4.0-17.0	4.5-7.3	---
	8-45	6.0-20.0	4.5-7.3	---
	45-74	4.0-16.0	4.5-6.5	---
	74-80	4.0-16.0	5.1-6.5	---
TahB:				
Tapawingo-----	0-2	5.0-15.0	5.6-7.3	---
	2-5	8.0-18.0	5.1-7.3	---
	5-27	8.0-18.0	5.1-7.3	---
	27-80	10.0-24.0	5.6-7.8	---
Nawakwa-----	0-2	5.0-15.0	5.6-7.3	---
	2-5	8.0-18.0	5.6-7.3	---
	5-11	8.0-18.0	5.6-7.3	---
	11-80	10.0-24.0	5.6-8.4	---
TcgG:				
Tipsaw-----	0-5	4.0-9.0	3.5-5.5	---
	5-28	2.0-6.0	3.5-5.5	---
	28-60	---	---	---
Rock outcrop.				
TtaG:				
Tulip-----	0-7	5.0-10.0	3.5-5.5	---
	7-45	5.0-10.0	3.5-5.5	---
	45-70	12.0-18.0	4.5-5.5	---
	70-80	12.0-20.0	4.5-6.0	---
Tipsaw-----	0-5	4.0-9.0	3.5-5.5	---
	5-28	2.0-6.0	3.5-5.5	---
	28-60	---	---	---
TtcE:				
Tulip-----	0-7	5.0-10.0	3.5-5.5	---
	7-45	5.0-10.0	3.5-5.5	---
	45-70	12.0-18.0	4.5-5.5	---
	70-80	12.0-20.0	4.5-6.0	---
Wellston-----	0-8	7.0-15.0	3.5-6.0	---
	8-30	6.0-16.0	3.5-5.5	---
	30-45	6.0-22.0	4.5-5.5	---
	45-49	6.0-15.0	4.5-5.5	---
	49-60	---	---	---
Adyeville-----	0-4	3.0-15.0	3.5-7.3	---
	4-35	3.0-10.0	3.5-5.5	---
	35-60	---	---	---
Uaa:				
Udorthents.				

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
VdgA:				
Vigo-----	0-8	4.0-17.0	4.5-7.3	---
	8-22	3.0-13.0	4.5-6.5	---
	22-46	7.0-15.0	4.5-5.5	---
	46-70	7.0-13.0	4.5-6.0	---
	70-80	8.0-15.0	6.1-7.3	---
W:				
Water.				
WeaA:				
Wea-----	0-15	7.0-12.0	6.1-7.3	---
	15-43	8.0-15.0	6.1-7.8	0-5
	43-80	1.0-3.0	7.4-8.4	25-40
Elston-----	0-20	5.0-10.0	5.1-7.3	---
	20-34	5.0-10.0	5.1-6.5	---
	34-76	4.0-8.0	5.1-6.5	---
	76-80	1.0-3.0	7.4-8.4	0-25
WeaAQ:				
Wea-----	0-15	7.0-12.0	6.1-7.3	---
	15-43	8.0-15.0	6.1-7.8	0-5
	43-80	1.0-3.0	7.4-8.4	25-40
Elston-----	0-20	5.0-10.0	5.1-7.3	---
	20-34	5.0-10.0	5.1-6.5	---
	34-76	4.0-8.0	5.1-6.5	---
	76-80	1.0-3.0	7.4-8.4	0-25
WhfD2:				
Wellston-----	0-8	7.0-15.0	3.5-7.3	---
	8-30	6.0-16.0	3.5-5.5	---
	30-45	6.0-22.0	4.5-5.5	---
	45-49	6.0-15.0	4.5-5.5	---
	49-60	---	---	---
WlmAK:				
Whitaker-----	0-16	4.0-17.0	5.6-7.3	---
	16-50	8.0-22.0	5.1-7.3	---
	50-80	1.0-11.0	6.1-8.4	0-20
WokAH:				
Wilbur-----	0-7	4.0-16.0	5.6-7.3	---
	7-32	4.0-15.0	5.6-7.8	---
	32-60	4.0-16.0	5.6-7.8	---
WolAI:				
Wilhite-----	0-9	18.0-36.0	5.1-7.3	---
	9-38	15.0-30.0	5.6-7.3	---
	38-60	14.0-26.0	5.6-7.3	---
WomAH:				
Wilhite-----	0-9	14.0-25.0	5.1-7.3	---
	9-38	15.0-30.0	5.6-7.3	---
	38-60	14.0-26.0	5.6-7.3	---
WprAQ:				
Wirt-----	0-8	6.0-13.0	5.6-7.3	---
	8-44	4.0-12.0	5.6-7.3	---
	44-60	3.0-12.0	5.6-7.3	---

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
WpuAK:				
Wirt-----	0-8	6.0-13.0	5.6-7.3	---
	8-38	4.0-12.0	5.6-7.3	---
	38-60	3.0-12.0	5.6-7.8	0-5
WpuAV:				
Wirt-----	0-8	6.0-13.0	5.6-7.3	---
	8-38	4.0-12.0	5.6-7.3	---
	38-60	3.0-12.0	5.6-7.3	---
WpyBJ:				
Wirt-----	0-21	6.0-16.0	6.6-7.3	---
	21-54	4.0-12.0	6.6-7.3	---
	54-60	4.0-12.0	6.6-7.3	---
Pekin-----	0-9	6.0-16.0	4.5-7.3	---
	9-27	8.0-15.0	4.5-7.3	---
	27-44	8.0-16.0	4.5-5.5	---
	44-60	8.0-15.0	4.5-6.5	---
ZamB2:				
Zanesville-----	0-8	8.0-15.0	4.5-7.3	---
	8-28	8.0-15.0	4.5-6.0	---
	28-55	8.0-15.0	4.5-5.5	---
	55-68	5.0-20.0	4.5-5.5	---
	68-80	---	---	---
ZamC2:				
Zanesville-----	0-8	8.0-15.0	4.5-7.3	---
	8-26	8.0-15.0	4.5-6.0	---
	26-50	8.0-15.0	4.5-5.5	---
	50-68	5.0-20.0	4.5-5.5	---
	68-80	---	---	---
ZamC3:				
Zanesville-----	0-6	8.0-15.0	4.5-7.3	---
	6-18	8.0-15.0	4.5-6.0	---
	18-43	8.0-15.0	4.5-5.5	---
	43-68	5.0-20.0	4.5-5.5	---
	68-80	---	---	---
ZamD2:				
Zanesville-----	0-6	8.0-15.0	4.5-7.3	---
	6-22	8.0-15.0	4.5-6.0	---
	22-50	8.0-15.0	4.5-5.5	---
	50-68	5.0-20.0	4.5-5.5	---
	68-80	---	---	---
ZamD5:				
Zanesville-----	0-2	8.0-15.0	4.5-7.3	---
	2-13	8.0-15.0	4.5-6.0	---
	13-35	8.0-15.0	4.5-5.5	---
	35-60	5.0-20.0	4.5-5.5	---
	60-72	---	---	---

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate
	In	meq/100g	pH	Pct
ZapD3:				
Zanesville-----	0-6	8.0-15.0	4.5-7.3	---
	6-16	8.0-15.0	4.5-6.0	---
	16-36	8.0-15.0	4.5-5.5	---
	36-68	5.0-20.0	4.5-5.5	---
	68-80	---	---	---
Tulip-----	0-5	5.0-10.0	3.5-5.5	---
	5-26	5.0-10.0	3.5-5.5	---
	26-60	12.0-18.0	4.5-5.5	---
	60-80	12.0-20.0	4.5-6.0	---

Table 20.--Water Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth Ft	Kind of water table	Months	Ponding duration	Maximum ponding depth Ft
AbgAU: Adrian-----	D	---	---	---	0.0-0.5	Apparent	Nov-Aug	Very long-	2.0
AfeC: Alvin-----	B	---	---	---	---	---	---	---	---
Bloomfield-----	A	---	---	---	---	---	---	---	---
AfeD: Alvin-----	B	---	---	---	---	---	---	---	---
Bloomfield-----	A	---	---	---	---	---	---	---	---
AffE: Alvin-----	B	---	---	---	---	---	---	---	---
Bloomfield-----	A	---	---	---	---	---	---	---	---
Princeton-----	B	---	---	---	---	---	---	---	---
AfsB: Alvin-----	B	---	---	---	---	---	---	---	---
Princeton-----	B	---	---	---	---	---	---	---	---
AfsC: Alvin-----	B	---	---	---	---	---	---	---	---
Princeton-----	B	---	---	---	---	---	---	---	---
AftD: Alvin-----	B	---	---	---	---	---	---	---	---
Princeton-----	B	---	---	---	---	---	---	---	---
AhrAK: Armiesburg-----	B	Occasional	Brief-----	Jan-Jun	---	---	---	---	---
AkeB2: Arney-----	B	---	---	---	1.5-2.5	Perched	Dec-Apr	---	---
AloB2: Ava-----	C	---	---	---	2.0-3.0	Perched	Dec-Apr	---	---
AmkA: Ayrshire-----	C	---	---	---	0.5-2.0	Apparent	Dec-Apr	---	---
BdxAV: Belknap-----	C	Frequent---	Very brief	Jan-Jun	0.5-2.0	Apparent	Dec-Apr	---	---
BgeAH: Birds-----	C/D	Frequent---	Brief-----	Jan-Jun	0.0-0.5	Apparent	Nov-Jul	Long-----	1.0
BodAV: Bonnie-----	C/D	Frequent---	Very brief	Jan-Jun	0.0-1.0	Apparent	Dec-May	Brief-----	0.5
CkkB2: Cincinnati-----	C	---	---	---	2.0-3.0	Perched	Dec-Apr	---	---

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
CkkC2: Cincinnati-----	C	---	---	---	2.0-3.0	Perched	Dec-Apr	---	---
CkkC3: Cincinnati-----	C	---	---	---	1.5-2.0	Perched	Dec-Apr	---	---
CkkD2: Cincinnati-----	C	---	---	---	2.0-3.0	Perched	Dec-Apr	---	---
CkkD3: Cincinnati-----	C	---	---	---	1.5-2.0	Perched	Dec-Apr	---	---
CspC2: Crider-----	B	---	---	---	---	---	---	---	---
CspC3: Crider-----	B	---	---	---	---	---	---	---	---
DfnA: Dubois-----	C	---	---	---	0.5-2.0	Perched	Dec-Apr	---	---
EaaD2: Ebal-----	C	---	---	---	2.0-3.0	Perched	Dec-Apr	---	---
GaaE2: Gallimore-----	B	---	---	---	---	---	---	---	---
GabG: Gallimore-----	B	---	---	---	---	---	---	---	---
Chetwynd-----	B	---	---	---	---	---	---	---	---
GblAH: Gessie-----	B	Frequent---	Brief-----	Jan-Jun	---	---	---	---	---
GmcD3: Grayford-----	B	---	---	---	---	---	---	---	---
GmcE2: Grayford-----	B	---	---	---	---	---	---	---	---
GmhD2: Grayford-----	B	---	---	---	---	---	---	---	---
Ryker-----	B	---	---	---	---	---	---	---	---
GmpE2: Greybrook-----	B	---	---	---	---	---	---	---	---
GmpF: Greybrook-----	B	---	---	---	---	---	---	---	---
HarD2: Haggatt-----	B	---	---	---	---	---	---	---	---
HarD3: Haggatt-----	B	---	---	---	---	---	---	---	---
HasE2: Haggatt-----	B	---	---	---	---	---	---	---	---
Caneyville-----	C	---	---	---	---	---	---	---	---

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth Ft	Kind of water table	Months	Ponding duration	Maximum ponding depth Ft
HccA: Haubstadt-----	C	---	---	---	1.5-2.0	Perched	Dec-Apr	---	---
HccB2: Haubstadt-----	C	---	---	---	1.5-2.0	Perched	Dec-Apr	---	---
HccC3: Haubstadt-----	C	---	---	---	1.0-2.0	Perched	Dec-Apr	---	---
HcgAH: Haymond-----	B	Frequent---	Brief-----	Jan-Jun	---	---	---	---	---
HchA: Haymond-----	B	Occasional-	Very brief	Jan-Jun	---	---	---	---	---
HefG: Hickory-----	B	---	---	---	---	---	---	---	---
HelD2: Hickory-----	B	---	---	---	---	---	---	---	---
Stinesville-----	B	---	---	---	---	---	---	---	---
HeoE: Hickory-----	B	---	---	---	---	---	---	---	---
HeoE3: Hickory-----	B	---	---	---	---	---	---	---	---
HeoG: Hickory-----	B	---	---	---	---	---	---	---	---
HepG: Hickory-----	B	---	---	---	---	---	---	---	---
Adyeville-----	B	---	---	---	---	---	---	---	---
HesG: Hickory-----	B	---	---	---	---	---	---	---	---
Chetwynd-----	B	---	---	---	---	---	---	---	---
HeuE: Hickory-----	B	---	---	---	---	---	---	---	---
Wellston-----	B	---	---	---	---	---	---	---	---
HeuF: Hickory-----	B	---	---	---	---	---	---	---	---
Wellston-----	B	---	---	---	---	---	---	---	---
HkaB: Hollybrook-----	C	---	---	---	0.5-2.0	Perched	Dec-Apr	---	---
HleAV: Holton-----	C	Frequent---	Very brief	Jan-Jun	0.5-2.0	Apparent	Dec-Apr	---	---
HnoA: Hoosierville----	C	---	---	---	0.0-1.0	Perched	Dec-May	Brief-----	0.5
LnfA: Lieber-----	C	---	---	---	0.5-2.0	Perched	Dec-Apr	---	---

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth	Kind of water table	Months	Ponding duration	Maximum ponding depth
					Ft				Ft
LnfB: Lieber-----	C	---	---	---	0.5-2.0	Perched	Dec-Apr	---	---
MecA: Martinsville----	B	---	---	---	---	---	---	---	---
MecAQ: Martinsville----	B	Rare-----	---	Jan-Jun	---	---	---	---	---
MecB: Martinsville----	B	---	---	---	---	---	---	---	---
MhhAH: McAdoo-----	B	Frequent---	Brief-----	Jan-Jun	---	---	---	---	---
MhhAK: McAdoo-----	B	Occasional-	Brief-----	Jan-Jun	---	---	---	---	---
MhuA: McGary-----	C	---	---	---	0.5-2.0	Perched	Dec-Apr	---	---
MrcG: Minnehaha-----	B	---	---	---	---	---	---	---	---
MsvA: Montgomery-----	C/D	---	---	---	0.0-1.0	Apparent	Dec-May	Brief-----	1.0
MvrAH: Moundhaven-----	A	Frequent---	Brief-----	Jan-Jun	---	---	---	---	---
NbhAH: Newark-----	C	Frequent---	Brief-----	Jan-Jun	0.5-2.0	Apparent	Dec-Apr	---	---
OfaAV: Oldenburg-----	B	Frequent---	Very brief	Jan-Jun	1.5-2.5	Apparent	Dec-Apr	---	---
OfcAV: Oldenburg-----	B	Frequent---	Very brief	Jan-Jun	1.5-2.5	Apparent	Dec-Apr	---	---
OfeB: Olephant-----	B	---	---	---	3.5-5.0	Perched	Dec-Apr	---	---
OmK2: Otwell-----	C	---	---	---	2.0-3.0	Perched	Dec-Apr	---	---
OmK3: Otwell-----	C	---	---	---	1.5-2.0	Perched	Dec-Apr	---	---
OmK3: Otwell-----	C	---	---	---	1.5-2.0	Perched	Dec-Apr	---	---
PbbC2: Parke-----	B	---	---	---	---	---	---	---	---
PbbC3: Parke-----	B	---	---	---	---	---	---	---	---
PbbD2: Parke-----	B	---	---	---	---	---	---	---	---
PbbD3: Parke-----	B	---	---	---	---	---	---	---	---

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth Ft	Kind of water table	Months	Ponding duration	Maximum ponding depth Ft
PcnA: Patrickburg----	C	---	---	---	0.5-2.0	Perched	Dec-Apr	---	---
PcrAQ: Pekin-----	C	Rare-----	---	Dec-Apr	1.5-2.0	Perched	Dec-Apr	---	---
PcrB2: Pekin-----	C	---	---	---	1.5-2.0	Perched	Dec-Apr	---	---
PcrC2: Pekin-----	C	---	---	---	1.5-2.0	Perched	Dec-Apr	---	---
PhaA: Peoga-----	C	---	---	---	0.0-1.0	Perched	Dec-May	Brief-----	0.5
PhaAP: Peoga-----	C	---	---	---	0.0-0.5	Perched	Nov-Jul	Long-----	2.0
PlcAV: Piankeshaw----	B	Frequent---	Very brief	Jan-Jun	---	---	---	---	---
PlfA: Pike-----	B	---	---	---	---	---	---	---	---
PlfB2: Pike-----	B	---	---	---	---	---	---	---	---
Pml: Pits, quarry.									
PrwAV: Pope-----	B	Frequent---	Very brief	Jan-Jun	---	---	---	---	---
PryB: Potawatomi-----	C	---	---	---	1.0-2.0	Perched	Dec-Apr	---	---
PsaD3: Pottersville----	C	---	---	---	---	---	---	---	---
PsaG: Pottersville----	C	---	---	---	---	---	---	---	---
PsbF: Pottersville----	C	---	---	---	---	---	---	---	---
Rnn: Riverwash-----	---	Frequent---	Brief-----	Nov-Jul	---	---	---	---	---
RpzG: Romona-----	D	---	---	---	---	---	---	---	---
Corydon-----	D	---	---	---	---	---	---	---	---
Rock outcrop.									
RtcC3: Ryker-----	B	---	---	---	---	---	---	---	---
SfoA: Shakamak-----	C	---	---	---	1.5-2.0	Perched	Dec-Apr	---	---

[illegible]

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth Ft	Kind of water table	Months	Ponding duration	Maximum ponding depth Ft
TcgG: Tipsaw-----	B	---	---	---	---	---	---	---	---
Rock outcrop.									
TtaG: Tulip-----	C	---	---	---	2.5-3.5	Perched	Dec-Apr	---	---
Tipsaw-----	B	---	---	---	---	---	---	---	---
TtcE: Tulip-----	C	---	---	---	2.5-3.5	Perched	Dec-Apr	---	---
Wellston-----	B	---	---	---	---	---	---	---	---
Adyeville-----	B	---	---	---	---	---	---	---	---
Uaa: Udorthents.									
VdgA: Vigo-----	C	---	---	---	0.5-2.0	Perched	Dec-Apr	---	---
W: Water.									
WeaA: Wea-----	A	---	---	---	---	---	---	---	---
Elston-----	B	---	---	---	---	---	---	---	---
WeaAQ: Wea-----	A	Rare-----	---	Jan-Jun	---	---	---	---	---
Elston-----	B	Rare-----	---	Jan-Jun	---	---	---	---	---
WhfD2: Wellston-----	B	---	---	---	---	---	---	---	---
WlmAK: Whitaker-----	C	Occasional-	Brief-----	Jan-Jun	0.5-2.0	Apparent	Dec-Apr	---	---
WokAH: Wilbur-----	B	Frequent---	Brief-----	Jan-Jun	1.5-2.5	Apparent	Dec-Apr	---	---
WolAI: Wilhite-----	C/D	Frequent---	Long-----	Jan-Jun	0.0-1.0	Apparent	Dec-May	Long-----	0.5
WomAH: Wilhite-----	C/D	Frequent---	Brief-----	Jan-Jun	0.0-1.0	Apparent	Dec-May	Brief-----	0.5
WpraQ: Wirt-----	B	Rare-----	---	Jan-Jun	---	---	---	---	---
WpuAK: Wirt-----	B	Occasional-	Brief-----	Jan-Jun	---	---	---	---	---
WpuAV: Wirt-----	B	Frequent---	Very brief	Jan-Jun	---	---	---	---	---

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table and ponding				
		Frequency	Duration	Months	Water table depth Ft	Kind of water table	Months	Ponding duration	Maximum ponding depth Ft
WpyBJ:									
Wirt-----	B	Frequent---	Very long-	Nov-Jun	---	---	---	---	---
Pekin-----	C	Frequent---	Very long-	Nov-Jun	1.5-2.0	Perched	Dec-Apr	---	---
ZamB2:									
Zanesville-----	C	---	---	---	2.0-3.0	Perched	Dec-Apr	---	---
ZamC2:									
Zanesville-----	C	---	---	---	2.0-3.0	Perched	Dec-Apr	---	---
ZamC3:									
Zanesville-----	C	---	---	---	1.5-2.5	Perched	Dec-Apr	---	---
ZamD2:									
Zanesville-----	C	---	---	---	2.0-3.0	Perched	Dec-Apr	---	---
ZamD5:									
Zanesville-----	C	---	---	---	1.5-2.5	Perched	Dec-Apr	---	---
ZapD3:									
Zanesville-----	C	---	---	---	1.5-2.5	Perched	Dec-Apr	---	---
Tulip-----	C	---	---	---	2.5-3.5	Perched	Dec-Apr	---	---

Table 21.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Bedrock		Subsidence		Potential for frost action	Risk of corrosion	
	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In	In			
AbgAU:							
Adrian-----	>60	---	6-18	29-33	High-----	High-----	Moderate.
AfeC, AfeD:							
Alvin-----	>80	---	0	---	Moderate----	Low-----	High.
Bloomfield-----	>80	---	0	---	Low-----	Low-----	High.
AffE:							
Alvin-----	>80	---	0	---	Moderate----	Low-----	High.
Bloomfield-----	>80	---	0	---	Low-----	Low-----	High.
Princeton-----	>80	---	0	---	Moderate----	Moderate----	Moderate.
AfsB, AfsC, AftD:							
Alvin-----	>80	---	0	---	Moderate----	Low-----	High.
Princeton-----	>80	---	0	---	Moderate----	Moderate----	Moderate.
AhrAK:							
Armiesburg-----	>60	---	0	---	High-----	Moderate----	Low.
AkeB2:							
Arney-----	>80	---	0	---	High-----	High-----	High.
AloB2:							
Ava-----	>80	---	0	---	High-----	Moderate----	High.
AmkA:							
Ayrshire-----	>60	---	0	---	High-----	High-----	Moderate.
BdxAV:							
Belknap-----	>60	---	0	---	High-----	High-----	High.
BgeAH:							
Birds-----	>60	---	0	---	High-----	High-----	Moderate.
BodAV:							
Bonnie-----	>60	---	0	---	High-----	High-----	High.
CkkB2, CkkC2, CkkC3, CkkD2, CkkD3:							
Cincinnati-----	>80	---	0	---	High-----	Moderate----	High.
CspC2, CspC3:							
Crider-----	>60	Hard	0	---	High-----	Moderate----	Moderate.
DfnA:							
Dubois-----	>80	---	0	---	High-----	High-----	High.
EaaD2:							
Ebal-----	50-90	Soft	0	---	High-----	High-----	High.
GaaE2:							
Gallimore-----	>80	---	0	---	Moderate----	Low-----	High.

Table 21.--Soil Features--Continued

Map symbol and soil name	Bedrock		Subsidence		Potential for frost action	Risk of corrosion	
	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In	In			
GabG:							
Gallimore-----	>80	---	0	---	Moderate----	Low-----	High.
Chetwynd-----	>80	---	0	---	Moderate----	Moderate----	High.
GblAH:							
Gessie-----	>60	---	0	---	High-----	Low-----	Low.
GmcD3, GmcE2:							
Grayford-----	40-60	Hard	0	---	High-----	High-----	Moderate.
GmhD2:							
Grayford-----	40-60	Hard	0	---	High-----	High-----	Moderate.
Ryker-----	>60	Hard	0	---	High-----	Moderate----	Moderate.
GmpE2, GmpF:							
Greybrook-----	>80	---	0	---	High-----	Moderate----	High.
HarD2, HarD3:							
Haggatt-----	40-60	Hard	0	---	High-----	High-----	Moderate.
HasE2:							
Haggatt-----	40-60	Hard	0	---	High-----	High-----	Moderate.
Caneyville-----	20-40	Hard	0	---	High-----	High-----	Moderate.
HccA, HccB2, HccC3:							
Haubstadt-----	>80	---	0	---	High-----	Moderate----	High.
HcgAH, HchA:							
Haymond-----	>60	---	0	---	High-----	Low-----	Low.
HefG:							
Hickory-----	>80	---	0	---	Moderate----	Moderate----	Moderate.
HeldD2:							
Hickory-----	>80	---	0	---	High-----	Moderate----	Moderate.
Stinesville-----	>80	---	0	---	High-----	Moderate----	Moderate.
HeoE, HeoE3, HeoG:							
Hickory-----	>80	---	0	---	High-----	Moderate----	Moderate.
HepG:							
Hickory-----	>60	---	0	---	High-----	Moderate----	Moderate.
Adyeville-----	20-40	Soft	0	---	Moderate----	Moderate----	High.
HesG:							
Hickory-----	>80	---	0	---	Moderate----	Moderate----	Moderate.
Chetwynd-----	>80	---	0	---	Moderate----	Moderate----	High.
HeuE, HeuF:							
Hickory-----	>60	---	0	---	High-----	Moderate----	Moderate.
Wellston-----	40-60	Soft	0	---	High-----	Moderate----	High.
HkaB:							
Hollybrook-----	>80	---	0	---	High-----	High-----	Moderate.

Table 21.--Soil Features--Continued

Map symbol and soil name	Bedrock		Subsidence		Potential for frost action	Risk of corrosion	
	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In	In			
HleAV: Holton-----	>60	---	0	---	High-----	High-----	Moderate.
HnoA: Hoosierville----	>80	---	0	---	High-----	High-----	High.
LnfA, LnfB: Lieber-----	>80	---	0	---	High-----	High-----	High.
MecA, MecAQ, MecB: Martinsville----	>80	---	0	---	Moderate----	Moderate----	Moderate.
MhhAH, MhhAK: McAdoo-----	>60	---	0	---	High-----	Low-----	Low.
MhuA: McGary-----	>80	---	0	---	High-----	High-----	Low.
MrcG: Minnehaha-----	>60	---	0	---	High-----	Moderate----	Moderate.
MsvA: Montgomery-----	>80	---	0	---	High-----	High-----	Low.
MvrAH: Moundhaven-----	>60	---	0	---	Low-----	Low-----	Low.
NbhAH: Newark-----	>60	---	0	---	High-----	High-----	Low.
OfaAV: Oldenburg-----	>60	---	0	---	High-----	Moderate----	Moderate.
OfcAV: Oldenburg-----	>60	---	0	---	Moderate----	Moderate----	Low.
OfeB: Olephant-----	>80	---	0	---	High-----	Moderate----	High.
OmkC2, OmkC3, OmkD3: Otwell-----	>80	---	0	---	High-----	Moderate----	High.
PbbC2, PbbC3, PbbD2, PbbD3: Parke-----	>80	---	0	---	High-----	Moderate----	High.
PcnA: Patrickburg-----	60-80	Soft	0	---	High-----	High-----	High.
PcrAQ, PcrB2, PcrC2: Pekin-----	>80	---	0	---	High-----	High-----	High.
PhaA, PhaAP: Peoga-----	>80	---	0	---	High-----	High-----	High.
PlcAV: Piankeshaw-----	>60	---	0	---	High-----	Low-----	Low.
PlfA, PlfB2: Pike-----	>80	---	0	---	High-----	Moderate----	High.

Table 21.--Soil Features--Continued

Map symbol and soil name	Bedrock		Subsidence		Potential for frost action	Risk of corrosion	
	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In	In			
Pml: Pits, quarry.							
PrwAV: Pope-----	>60	---	0	---	Moderate----	Low-----	High.
PryB: Potawatomi-----	>80	---	0	---	High-----	Moderate----	High.
PsaD3, PsaG, PsbF: Pottersville----	>80	---	0	---	High-----	High-----	Moderate.
Rnn: Riverwash.							
RpzG: Romona-----	20-40	Hard	0	---	Moderate----	Moderate----	Low.
Corydon-----	10-20	Hard	0	---	Moderate----	Moderate----	Low.
Rock outcrop.							
RtcC3: Ryker-----	>60	Hard	0	---	High-----	Moderate----	Moderate.
SfoA: Shakamak-----	>80	---	0	---	High-----	High-----	High.
SfyB2, SfyC2: Shircliff-----	>80	---	0	---	High-----	High-----	Moderate.
SneC2, SneC3, SneD2, SneD3, SneD5: Solsberry-----	>80	---	0	---	High-----	High-----	High.
StaAV: Steff-----	>60	---	0	---	High-----	Moderate----	High.
StdAH: Stendal-----	>60	---	0	---	High-----	High-----	High.
StfB2, StfC2: Stinesville-----	>80	---	0	---	High-----	Moderate----	Moderate.
StgC2, StgD2: Stinesville-----	>80	---	0	---	High-----	Moderate----	Moderate.
Ryker-----	>60	Hard	0	---	High-----	Moderate----	Moderate.
Grayford-----	40-60	Hard	0	---	High-----	High-----	Moderate.
SupAH: Stonelick-----	>60	---	0	---	Moderate----	Low-----	Low.
SwhG: Stubenville-----	>80	---	0	---	High-----	Moderate----	Moderate.
Hickory-----	>80	---	0	---	Moderate----	Moderate----	Moderate.
TadA: Taggart-----	>80	---	0	---	High-----	High-----	High.

Table 21.--Soil Features--Continued

Map symbol and soil name	Bedrock		Subsidence		Potential for frost action	Risk of corrosion	
	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In	In			
TahB:							
Tapawingo-----	>80	---	0	---	High-----	Moderate----	Moderate.
Nawakwa-----	>80	---	0	---	High-----	Moderate----	Moderate.
TcgG:							
Tipsaw-----	20-40	Soft	0	---	Moderate----	Low-----	High.
Rock outcrop.							
TtaG:							
Tulip-----	60-90	Soft	0	---	High-----	Moderate----	High.
Tipsaw-----	20-40	Soft	0	---	Moderate----	Low-----	High.
TtcE:							
Tulip-----	60-90	Soft	0	---	High-----	Moderate----	High.
Wellston-----	40-60	Soft	0	---	High-----	Moderate----	High.
Adyeville-----	20-40	Soft	0	---	High-----	Moderate----	High.
Uaa:							
Udorthents.							
VdgA:							
Vigo-----	>80	---	0	---	High-----	High-----	High.
W:							
Water.							
WeaA, WeaAQ:							
Wea-----	>80	---	0	---	Moderate----	Moderate----	Moderate.
Elston-----	>80	---	0	---	Moderate----	Low-----	Moderate.
WhfD2:							
Wellston-----	40-60	Soft	0	---	High-----	Moderate----	High.
WlmAK:							
Whitaker-----	>80	---	0	---	High-----	High-----	Moderate.
WokAH:							
Wilbur-----	>60	---	0	---	High-----	Moderate----	Low.
WolAI, WomAH:							
Wilhite-----	>60	---	0	---	Moderate----	Low-----	Moderate.
WprAQ:							
Wirt-----	>60	---	0	---	High-----	Low-----	Moderate.
WpuAK, WpuAV:							
Wirt-----	>60	---	0	---	Moderate----	Low-----	Moderate.
WpyBJ:							
Wirt-----	>60	---	0	---	High-----	Low-----	Moderate.
Pekin-----	>80	---	0	---	High-----	High-----	High.
ZamB2, ZamC2, ZamC3, ZamD2:							
Zanesville-----	60-80	Soft	0	---	High-----	Moderate----	High.

Table 21.--Soil Features--Continued

Map symbol and soil name	Bedrock		Subsidence		Potential for frost action	Risk of corrosion	
	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In	In			
ZamD5: Zanesville-----	48-80	Soft	0	---	High-----	Moderate----	High.
ZapD3: Zanesville-----	60-80	Soft	0	---	High-----	Moderate----	High.
Tulip-----	60-90	Soft	0	---	High-----	Moderate----	High.

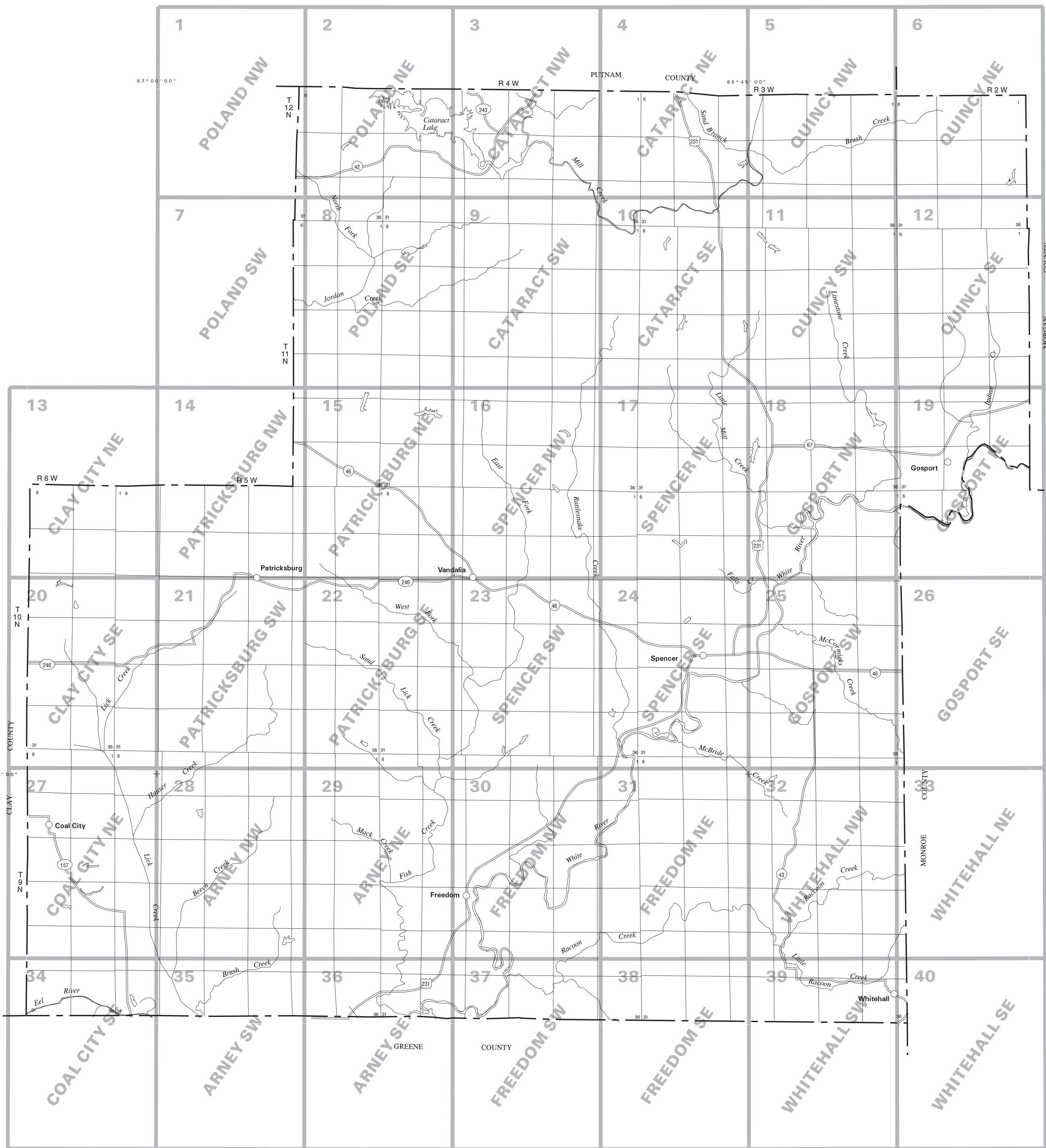
Table 22.--Classification of the Soils

(An asterisk in the first column indicates that some or all map units of this soil are a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series.)

Soil name	Family or higher taxonomic class
Adrian-----	Sandy or sandy-skeletal, mixed, euic, mesic Terric Haplosaprists
Adyeville-----	Coarse-loamy, mixed, semiactive, mesic Typic Hapludults
Alvin-----	Coarse-loamy, mixed, superactive, mesic Typic Hapludalfs
Armiesburg-----	Fine-silty, mixed, superactive, mesic Fluventic Hapludolls
Arney-----	Fine-silty, mixed, active, mesic Aquultic Hapludalfs
Ava-----	Fine-silty, mixed, superactive, mesic Oxyaquic Fragiudalfs
Ayrshire-----	Fine-loamy, mixed, active, mesic Aeric Endoaqualfs
Belknap-----	Coarse-silty, mixed, active, acid, mesic Fluvaquentic Endoaquepts
Birds-----	Fine-silty, mixed, superactive, nonacid, mesic Typic Fluvaquents
Bloomfield-----	Sandy, mixed, mesic Lamellic Hapludalfs
Bonnie-----	Fine-silty, mixed, active, acid, mesic Typic Fluvaquents
Caneyville-----	Fine, mixed, active, mesic Typic Hapludalfs
Chetwynd-----	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
*Cincinnati-----	Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs
Corydon-----	Clayey, mixed, superactive, mesic Lithic Argiudolls
Crider-----	Fine-silty, mixed, active, mesic Typic Paleudalfs
*Dubois-----	Fine-silty, mixed, active, mesic Aeric Fragiaqualfs
Ebal-----	Fine, mixed, active, mesic Oxyaquic Hapludalfs
Elston-----	Coarse-loamy, mixed, active, mesic Typic Argiudolls
Gallimore-----	Coarse-loamy, mixed, active, mesic Typic Dystrudepts
Gessie-----	Fine-loamy, mixed, superactive, mesic Fluventic Eutrudepts
*Grayford-----	Fine-loamy, mixed, active, mesic Ultic Hapludalfs
Greybrook-----	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Haggatt-----	Fine, mixed, active, mesic Typic Hapludalfs
*Haubstadt-----	Fine-silty, mixed, active, mesic Aquic Fragiudalfs
Haymond-----	Coarse-silty, mixed, superactive, mesic Dystric Fluventic Eutrudepts
Hickory-----	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Hollybrook-----	Fine-loamy, mixed, active, nonacid, mesic Alfic Udarents
Holton-----	Coarse-loamy, mixed, active, nonacid, mesic Aeric Endoaquepts
Hoosierville-----	Fine-silty, mixed, superactive, mesic Typic Epiqualfs
Lieber-----	Fine-silty, mixed, active, mesic Aeric Epiqualfs
Martinsville-----	Fine-loamy, mixed, active, mesic Typic Hapludalfs
McAdoo-----	Fine-silty, mixed, superactive, mesic Fluventic Eutrudepts
McGary-----	Fine, mixed, active, mesic Aeric Epiqualfs
Minnehaha-----	Fine-loamy, mixed, active, nonacid, mesic Alfic Udarents
Montgomery-----	Fine, mixed, active, mesic Vertic Endoaquolls
Moundhaven-----	Sandy, mixed, mesic Typic Udifluvents
Nawakwa-----	Fine-loamy, mixed, active, nonacid, mesic Typic Udorthents
*Newark-----	Fine-silty, mixed, active, nonacid, mesic Aeric Fluvaquents
Oldenburg-----	Coarse-loamy, mixed, active, mesic Fluvaquentic Eutrudepts
Olephant-----	Fine-silty, mixed, active, mesic Ultic Hapludalfs
*Otwell-----	Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs
Parke-----	Fine-silty, mixed, active, mesic Ultic Hapludalfs
Patrickburg-----	Fine-silty, mixed, active, mesic Aeric Fragiaqualfs
*Pekin-----	Fine-silty, mixed, active, mesic Aquic Fragiudults
Peoga-----	Fine-silty, mixed, superactive, mesic Fragic Epiqualfs
Piankeshaw-----	Fine-loamy, mixed, active, mesic Dystric Fluventic Eutrudepts
Pike-----	Fine-silty, mixed, active, mesic Ultic Hapludalfs
Pope-----	Coarse-loamy, mixed, active, mesic Fluventic Dystrudepts
Potawatomi-----	Fine-silty, mixed, active, mesic Fragiaquic Hapludalfs
Pottersville-----	Fine-silty, mixed, active, mesic Typic Hapludalfs
Princeton-----	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Romona-----	Fine, mixed, superactive, mesic Typic Argiudolls
Ryker-----	Fine-silty, mixed, active, mesic Typic Paleudalfs
Shakamak-----	Fine-silty, mixed, active, mesic Aquic Fragiudalfs
Shircliff-----	Fine, mixed, active, mesic Oxyaquic Hapludalfs
*Solsberry-----	Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs
*Steff-----	Fine-silty, mixed, active, mesic Fluvaquentic Dystrudepts
Stendal-----	Fine-silty, mixed, active, acid, mesic Fluvaquentic Endoaquepts
Stinesville-----	Fine-silty, mixed, active, mesic Typic Paleudalfs

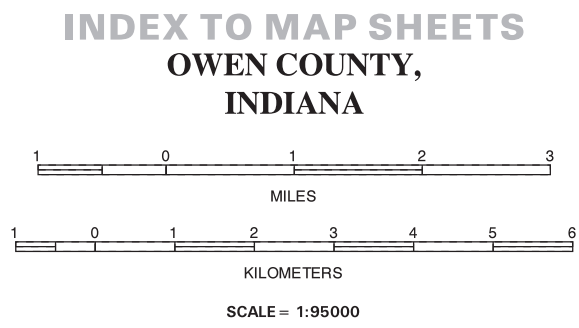
Table 22.--Classification of the Soils--Continued

Soil name	Family or higher taxonomic class
Stonelick-----	Coarse-loamy, mixed, superactive, calcareous, mesic Typic Udifluvents
Stubenville-----	Fine-silty, mixed, active, mesic Typic Hapludalfs
Taggart-----	Fine-silty, mixed, active, mesic Aeric Epiaqualfs
Tapawingo-----	Fine-loamy, mixed, active, nonacid, mesic Typic Udorthents
Tipsaw-----	Coarse-loamy, mixed, semiactive, mesic Typic Dystrudepts
Tulip-----	Fine-loamy, mixed, active, mesic Oxyaquic Hapludults
Udorthents-----	Loamy, mixed, mesic Udorthents
Vigo-----	Fine-silty, mixed, superactive, mesic Aeric Glossaqualfs
Wea-----	Fine-loamy, mixed, active, mesic Typic Argiudolls
*Wellston-----	Fine-silty, mixed, active, mesic Ultic Hapludalfs
Whitaker-----	Fine-loamy, mixed, active, mesic Aeric Endoaqualfs
Wilbur-----	Coarse-silty, mixed, superactive, mesic Fluvaquentic Eutrudepts
Wilhite-----	Fine, mixed, active, nonacid, mesic Fluvaquentic Endoaquepts
Wirt-----	Coarse-loamy, mixed, superactive, mesic Dystric Fluventic Eutrudepts
Zanesville, soft bedrock substratum-----	Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs



SECTIONALIZED
TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36



SOIL LEGEND

Map symbols consist of a combination of letters and numbers. The initial letters represent the kind of soil. An uppercase letter following the first three letters indicates the class of slope. Symbols without a slope letter are for miscellaneous areas. A second uppercase letter indicates flooding frequency and duration or other soil phases. The letter H indicates frequent flooding for brief periods, the letter I indicates frequent flooding for long periods, the letter J indicates frequent flooding for very long periods, the letter K indicates occasional flooding for brief periods, the letter P indicates the map unit is ponded, the letter Q indicates rare flooding, the letter U indicates the map unit is undrained, and the letter V indicates frequent flooding for very brief periods. A final number of 2 following the slope letter indicates that the soil is moderately eroded, a final number of 3 indicates that the soil is severely eroded, and a final number of 5 indicates a gullied phase. Absence of a final number following the slope class letter indicates that the soil is not eroded or is only slightly eroded.

SYMBOL	NAME	SYMBOL	NAME
AbgAU	Adrian muck, undrained, 0 to 1 percent slopes	OfeB	Olephant silt loam, 1 to 3 percent slopes
AfeC	Alvin-Bloomfield loamy sands, 6 to 12 percent slopes	OmkC2	Otwell silt loam, 6 to 12 percent slopes, eroded
AfeD	Alvin-Bloomfield loamy sands, 12 to 18 percent slopes	OmkC3	Otwell silt loam, 6 to 12 percent slopes, severely eroded
Affe	Alvin-Bloomfield-Princeton complex, 18 to 25 percent slopes	OmkD3	Otwell silt loam, 12 to 18 percent slopes, severely eroded
AfsB	Alvin-Princeton fine sandy loams, 2 to 6 percent slopes	PbbC2	Parke silt loam, 6 to 12 percent slopes, eroded
AfsC	Alvin-Princeton fine sandy loams, 6 to 12 percent slopes	PbbC3	Parke silt loam, 6 to 12 percent slopes, severely eroded
AftD	Alvin-Princeton sandy loams, 12 to 18 percent slopes	PbbD2	Parke silt loam, 12 to 18 percent slopes, eroded
AhrAK	Armiesburg silty clay loam, 0 to 2 percent slopes, occasionally flooded, brief duration	PbbD3	Parke silt loam, 12 to 18 percent slopes, severely eroded
AkeB2	Arney silt loam, 2 to 6 percent slopes, eroded	PcnA	Patrickzburg silt loam, 0 to 2 percent slopes
AloB2	Ava silt loam, 2 to 6 percent slopes, eroded	PcrAQ	Pekin silt loam, 0 to 2 percent slopes, rarely flooded
AmkA	Ayrshire fine sandy loam, 0 to 2 percent slopes	PcrB2	Pekin silt loam, 2 to 6 percent slopes, eroded
BdxAV	Belknap silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration	PcrC2	Pekin silt loam, 6 to 12 percent slopes, eroded
BgeAH	Birds silt loam, 0 to 1 percent slopes, frequently flooded, brief duration	PhaA	Peoga silt loam, 0 to 1 percent slopes
BodAV	Bonnie silt loam, 0 to 1 percent slopes, frequently flooded, very brief duration	PhaAP	Peoga silt loam, ponded, 0 to 1 percent slopes
CkkB2	Cincinnati silt loam, 2 to 6 percent slopes, eroded	PlcAV	Piankeshaw silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration
CkkC2	Cincinnati silt loam, 6 to 12 percent slopes, eroded	PIIA	Pike silt loam, 0 to 2 percent slopes
CkkC3	Cincinnati silt loam, 6 to 12 percent slopes, severely eroded	PIfB2	Pike silt loam, 2 to 6 percent slopes, eroded
CkkD2	Cincinnati silt loam, 12 to 18 percent slopes, eroded	Pnl	Pits, quarry
CkkD3	Cincinnati silt loam, 12 to 18 percent slopes, severely eroded	PrwAV	Pope fine sandy loam, 0 to 2 percent slopes, frequently flooded, very brief duration
CspC2	Crider silt loam, 6 to 12 percent slopes, eroded	PryB	Potawatomi silt loam, 1 to 3 percent slopes
CspC3	Crider silt loam, 6 to 12 percent slopes, severely eroded	PsaD3	Pottersville silt loam, 12 to 18 percent slopes, severely eroded
DfnA	Dubois silt loam, 0 to 2 percent slopes	PsaG	Pottersville silt loam, 25 to 50 percent slopes
EaaD2	Ebal silt loam, 12 to 18 percent slopes, eroded	PsbF	Pottersville silt loam, karst, steep
GaaE2	Gallimore loam, 18 to 25 percent slopes, eroded	Rnn	Riverwash
GabG	Gallimore-Chetwynd complex, 25 to 70 percent slopes	RpzG	Romona-Corydon-Rock outcrop complex, 35 to 60 percent slopes
GblAH	Gessie silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	RtcC3	Ryker silt loam, 6 to 12 percent slopes, severely eroded
GmcD3	Grayford silt loam, 12 to 18 percent slopes, severely eroded	SfoA	Shakamak silt loam, 1 to 3 percent slopes
GmcE2	Grayford silt loam, 18 to 25 percent slopes, eroded	SlyB2	Shircliff silt loam, 2 to 6 percent slopes, eroded
GmhD2	Grayford-Ryker silt loams, 12 to 18 percent slopes, eroded	SlyC2	Shircliff silt loam, 6 to 12 percent slopes, eroded
GmpE2	Greybrook silt loam, 18 to 25 percent slopes, eroded	SneC2	Solsberry silt loam, 6 to 12 percent slopes, eroded
GmpF	Greybrook silt loam, 25 to 35 percent slopes	SneC3	Solsberry silt loam, 6 to 12 percent slopes, severely eroded
HarD2	Haggatt silt loam, 12 to 18 percent slopes, eroded	SneD2	Solsberry silt loam, 12 to 18 percent slopes, eroded
HarD3	Haggatt silt loam, 12 to 18 percent slopes, severely eroded	SneD3	Solsberry silt loam, 12 to 18 percent slopes, severely eroded
HasE2	Haggatt-Caneyville silt loams, 18 to 25 percent slopes, eroded	SneD5	Solsberry silt loam, 12 to 18 percent slopes, gullied
HccA	Haubstadt silt loam, 0 to 2 percent slopes	StaAV	Steff silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration
HccB2	Haubstadt silt loam, 2 to 6 percent slopes, eroded	StdAH	Stendal silt loam, 0 to 2 percent slopes, frequently flooded, brief duration
HccC3	Haubstadt silt loam, 6 to 12 percent slopes, severely eroded	StfB2	Stinesville silt loam, 2 to 6 percent slopes, eroded
HcgAH	Haymond silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	StfC2	Stinesville silt loam, 6 to 12 percent slopes, eroded
HchA	Haymond silt loam, sinkhole, 0 to 2 percent slopes	StgC2	Stinesville-Ryker-Grayford silt loams, karst, rolling, eroded
HefG	Hickory loam, 45 to 70 percent slopes	StgD2	Stinesville-Ryker-Grayford silt loams, karst, hilly, eroded
HelD2	Hickory-Stinesville silt loams, karst, hilly, eroded	SupAH	Stonelick sandy loam, 0 to 2 percent slopes, frequently flooded, brief duration
HeoE	Hickory silt loam, 18 to 25 percent slopes	SwhG	Stubenville-Hickory complex, 35 to 70 percent slopes
HeoE3	Hickory silt loam, 18 to 25 percent slopes, severely eroded	TadA	Taggart silt loam, 0 to 2 percent slopes
HeoG	Hickory silt loam, 25 to 70 percent slopes	TahB	Tapawingo and Nawakwa silt loams, 2 to 8 percent slopes
HepG	Hickory-Adyeville complex, 35 to 60 percent slopes	TcgG	Tipsaw-Rock outcrop complex, 35 to 70 percent slopes
HesG	Hickory-Chetwynd loams, 35 to 70 percent slopes	TtaG	Tulip-Tipsaw complex, 25 to 60 percent slopes
HeuE	Hickory-Wellston silt loams, 18 to 25 percent slopes	TtcE	Tulip-Wellston-Adyeville silt loams, 18 to 25 percent slopes
HeuF	Hickory-Wellston silt loams, 25 to 35 percent slopes	Uaa	Udorthents, cut and filled
HkaB	Hollybrook silt loam, 1 to 5 percent slopes	VdgA	Vigo silt loam, 0 to 2 percent slopes
HleAV	Holton silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration	W	Water
HnoA	Hoosierville silt loam, 0 to 1 percent slopes	WeaA	Wea, sandy substratum-Elston complex, 0 to 2 percent slopes
LnfA	Lieber silt loam, 0 to 2 percent slopes	WeaAQ	Wea, sandy substratum-Elston complex, 0 to 2 percent slopes, rarely flooded
LnfB	Lieber silt loam, 2 to 4 percent slopes	WhfD2	Wellston silt loam, 12 to 18 percent slopes, eroded
MecA	Martinsville loam, 0 to 2 percent slopes	WlmAK	Whitaker loam, 0 to 2 percent slopes, occasionally flooded, brief duration
MecAQ	Martinsville loam, 0 to 2 percent slopes, rarely flooded	WokAH	Wilbur silt loam, 0 to 2 percent slopes, frequently flooded, brief duration
MecB	Martinsville loam, 2 to 6 percent slopes	WolAI	Wilhite silty clay, 0 to 1 percent slopes, frequently flooded, long duration
MhhAH	McAdoo silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	WomAH	Wilhite silty clay loam, 0 to 1 percent slopes, frequently flooded, brief duration
MhhAK	McAdoo silt loam, 0 to 2 percent slopes, occasionally flooded, brief duration	WprAQ	Wirt loam, 0 to 2 percent slopes, rarely flooded
MhuA	McGary silt loam, 0 to 2 percent slopes	WpuAK	Wirt silt loam, 0 to 2 percent slopes, occasionally flooded, brief duration
MrcG	Minnehaha silty clay loam, 35 to 75 percent slopes	WpuAV	Wirt silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration
MsvA	Montgomery silty clay loam, 0 to 1 percent slopes	WpyBJ	Wirt-Pekin silt loams, 0 to 6 percent slopes, frequently flooded, very long duration
MvrAH	Moundhaven loamy fine sand, 0 to 2 percent slopes, frequently flooded, brief duration	ZamB2	Zanesville silt loam, soft bedrock substratum, 2 to 6 percent slopes, eroded
NbhAH	Newark silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	ZamC2	Zanesville silt loam, soft bedrock substratum, 6 to 12 percent slopes, eroded
OfaAV	Oldenburg silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration	ZamC3	Zanesville silt loam, soft bedrock substratum, 6 to 12 percent slopes, severely eroded
OfcAV	Oldenburg fine sandy loam, sandy substratum, 0 to 2 percent slopes, frequently flooded, very brief duration	ZamD2	Zanesville silt loam, soft bedrock substratum, 12 to 18 percent slopes, eroded
		ZamD5	Zanesville silt loam, soft bedrock substratum, 12 to 18 percent slopes, gullied
		ZapD3	Zanesville, soft bedrock substratum-Tulip silt loams, 12 to 18 percent slopes, severely eroded

CONVENTIONAL AND SPECIAL
SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

County or parish	_____
Minor civil division	___ _ _ _
Reservation (national forest or park, state forest or park)	___ _ _ _
Field sheet matchline & neatline	_____
LAND DIVISION CORNER (section and land grants)	└ ┴ ┴ ┴

GEOGRAPHIC COORDINATE TICK

Federal	 
State	 

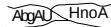
HYDROGRAPHIC FEATURES

STREAMS

Unclassified, single line stream	
Unclassified, drainage and/or irrigation ditch	
Drainage end	

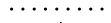
SPECIAL SYMBOLS FOR SOIL
SURVEY AND SSURGO

SOIL DELINEATIONS AND SYMBOLS



LANDFORMFEATURES

ESCARPMENTS

Bedrock	
Other than bedrock	
SHORTSTEEPSLOPE	
SINKHOLE	

EXCAVATIONS

PITS

Gravel pit	
Mine or quarry	

MISCELLANEOUS SURFACE FEATURES

Marsh or swamp	
Rock outcrop (includes sandstone and shale)	
Sandy spot	
Severely eroded spot	
Wet spot	
Unclassified water	
Very Severely eroded spot	

Definitions of Special Symbols

Name	Description	Label
Blowout	A small saucer, cup, or trough-shaped hollow or depression formed by wind erosion, on a preexisting sand deposit. Typically 0.2 acre to 2.0 acres.	BLO
Borrow pit	An open excavation from which soil and underlying material have been removed, usually for construction purposes. Typically 0.2 acre to 2.0 acres.	BPI
Clay spot	A spot where the surface layer is silty clay or clay in areas where the surface layer of the soils in the surrounding map unit is sandy loam, loam, silt loam, or coarser. Typically 0.2 acre to 2.0 acres.	CLA
Depression, closed	A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and is without a natural outlet for surface drainage. Typically 0.2 acre to 2.0 acres.	DEP
Escarpment, bedrock	A relatively continuous and steep slope or cliff, produced by erosion or faulting, that breaks the general continuity of more gently sloping land surfaces. Exposed material is hard or soft bedrock.	ESB
Escarpment, nonbedrock	A relatively continuous and steep slope or cliff, generally produced by erosion but in some places produced by faulting, that breaks the continuity of more gently sloping land surfaces. Exposed earthy material is nonsoil or very shallow soil.	ESO
Gravel pit	An open excavation from which soil and underlying material have been removed and used, without crushing, as a source of sand or gravel. Typically 0.2 acre to 2.0 acres.	GPI
Gravelly spot	A spot where the surface layer has more than 35 percent, by volume, rock fragments that are mostly less than 3 inches in diameter in an area with less than 15 percent rock fragments. Typically 0.2 acre to 2.0 acres.	GRA
Gully	A small channel with steep sides cut by running water through which water ordinarily runs only after a rain or after melting of ice or snow. It generally is an obstacle to wheeled vehicles and is too deep to be obliterated by ordinary tillage.	GUL
Iron accumulation	An accumulation of iron in the form of nodules, concretions, or soft masses on the surface or near the surface of soils. Typically 0.2 acre to 2.0 acres.	FES
Landfill	An area of accumulated waste products of human habitation, either above or below natural ground level. Typically 0.2 acre to 2.0 acres.	LDF
Lava flow	A solidified body of rock formed through lateral, surface outpouring of molten lava from a vent or fissure. Commonly lobate in shape. Typically 0.2 acre to 2.0 acres.	LAV
Levee	An embankment that confines or controls water, especially one built along the banks of a river to prevent overflow onto lowlands. Levees built according to COE standards.	LVS

Name	Description	Label
Marsh or swamp	A water-saturated, very poorly drained area, intermittently or permanently covered by water. Sedges, cattails, and rushes are the dominant vegetation in marsh areas, and trees or shrubs are the dominant vegetation in swamps. Typically 0.2 acre to 2.0 acres.	MAR
Mine or quarry	An open excavation from which soil and underlying material have been removed and in which bedrock is exposed. Also denotes surface openings to underground mines. Typically 0.2 acre to 2.0 acres.	MPI
Miscellaneous water	A small, constructed water area that is used for industrial, sanitary, or mining applications and contains water most of the year. Typically 0.2 acre to 2.0 acres.	MIS
Muck spot	An area that occurs within an area of poorly drained or very poorly drained soil and that has a histic epipedon or an organic surface layer. The symbol is used only in map units consisting of mineral soil. Typically 0.2 acre to 2.0 acres.	MUC
Oil brine damaged land	An area of soil that has been severely damaged by the accumulation of oil brine, with or without liquid oily wastes. The area is typically barren but may have a vegetative cover of salt-tolerant plants. Typically 0.2 acre to 2.0 acres.	OBR
Perennial water	A small, natural or constructed lake, pond, or pit that contains water most of the year. Typically 0.2 acre to 2.0 acres.	WAT
Rock outcrop	An exposure of bedrock at the surface of the earth. Not used where the named soils of the surrounding map unit are shallow over bedrock or where "Rock outcrop" is a named component of the map unit. Typically 0.2 acre to 2.0 acres.	ROC
Saline spot	An area where the surface layer has an electrical conductivity of 8 mmhos/cm-1 more than the surface layer of the named soils in the surrounding map unit, in which electrical conductivity is 2 mmhos/cm-1 or less. Typically 0.2 acre to 2.0 acres.	SAL
Sandy spot	A spot where the surface layer is loamy fine sand or coarser in areas where the surface layer of the named soils in the surrounding map unit is very fine sandy loam or finer. Typically 0.2 acre to 2.0 acres.	SAN
Severely eroded spot	An area where, on the average, 75 percent or more of the original surface layer has been lost because of accelerated erosion. Not used in map units in which "severely eroded," "very severely eroded," or "gullied" is part of the map unit name. Typically 0.2 acre to 2.0 acres	ERO
Short, steep slope	A narrow area of soil having slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.	SLP
Sinkhole	A closed depression formed either by solution of the surficial rock or by collapse of underlying caves. Typically 0.2 acre to 2.0 acres.	SNK
Slide or slip	A prominent landform scar or ridge caused by fairly recent mass movement or descent of earthy material resulting from failure of earth or rock under shear stress along one or several surfaces. Typically 0.2 acre to 2.0 acres.	SLI

Name	Description	Label
Sodic spot	An area where the surface layer has a sodium adsorption ratio that is at least 10 more than that of the surface layer of the named soils in the surrounding map unit, which have a sodium adsorption ratio of 5 or less. Typically 0.2 acre to 2.0 acres.	SOD
Spoil area	A pile of earthy materials, either smoothed or uneven, resulting from human activity. Typically 0.2 acre to 2.0 acres.	SPO
Stony spot	A spot where 0.01 to 0.1 percent of the surface cover is rock fragments that are more than 10 inches in diameter in areas where the surrounding soil has no surface stones. Typically 0.2 acre to 2.0 acres.	STN
Unclassified water	A small, natural or manmade lake, pond, or pit that contains water, of an unspecified nature, most of the year. Typically 0.2 acre to 2.0 acres.	UWT
Very stony spot	A spot where 0.1 to 3.0 percent of the surface cover is rock fragments that are more than 10 inches in diameter in areas where the surface cover of the surrounding soil is less than 0.01 percent stones. Typically 0.2 acre to 2.0 acres.	STV
Wet depression	A shallow, concave area within an area of poorly drained or very poorly drained soils in which water is ponded for intermittent periods. The concave area is saturated for appreciably longer periods of time than the surrounding soil. Typically 0.2 acre to 2.0 acres.	WDP
Wet spot	A somewhat poorly drained to very poorly drained area that is at least two drainage classes wetter than the named soils in the surrounding map unit. Typically 0.2 acre to 2.0 acres.	WET



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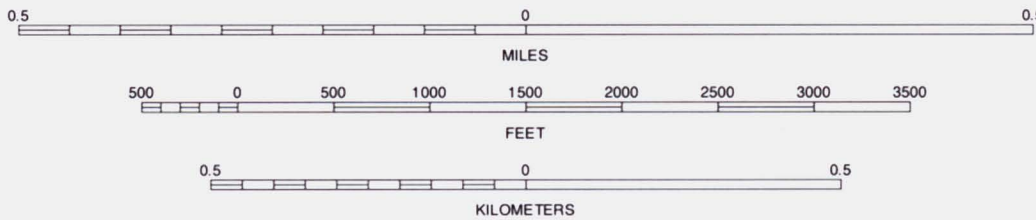
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE
LOCATION

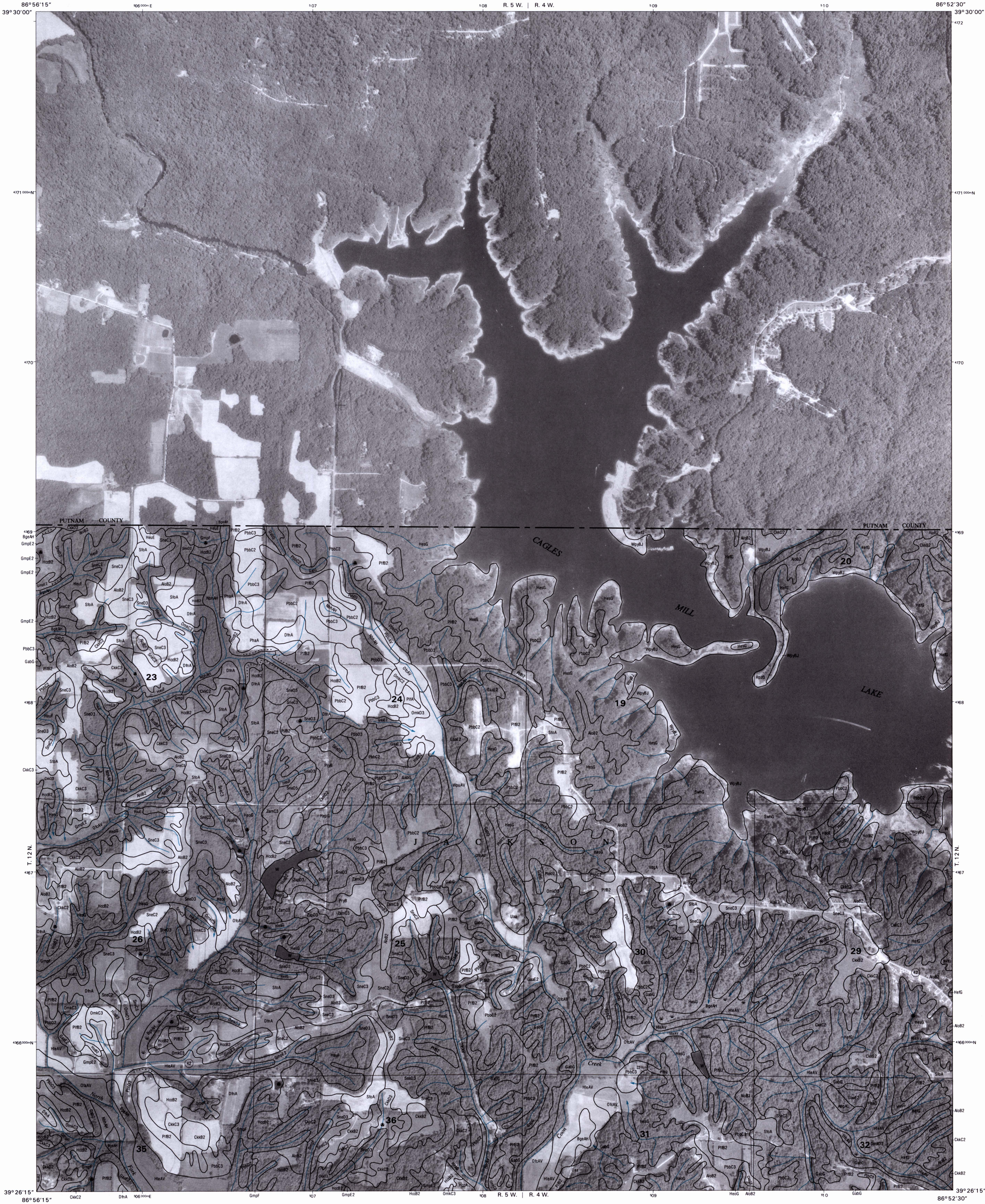
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INDEX TO ADJOINING 3.75 MAPS

POLAND NW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 1 OF 40



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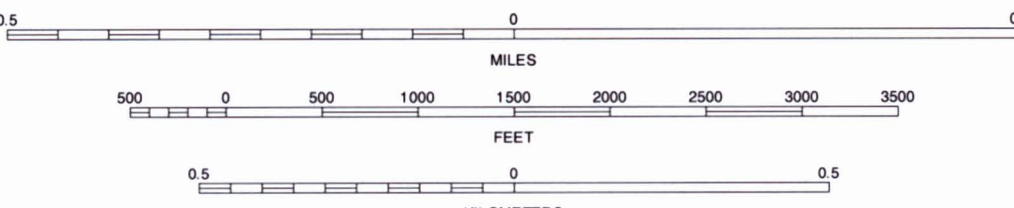
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter UTM. Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



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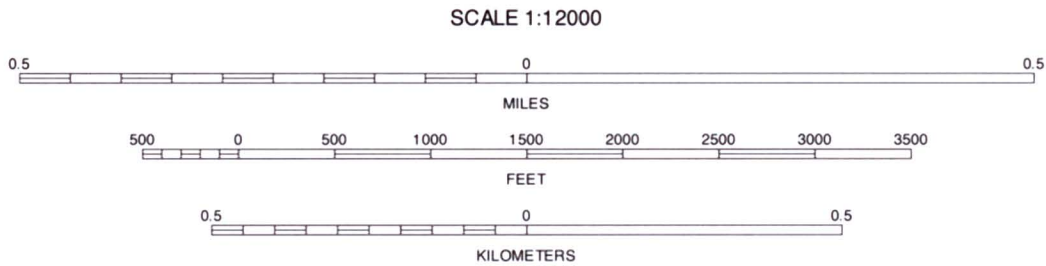
INDEX TO ADJOINING 3.75 MAPS

POLAND NE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 2 OF 40



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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000 meter ties: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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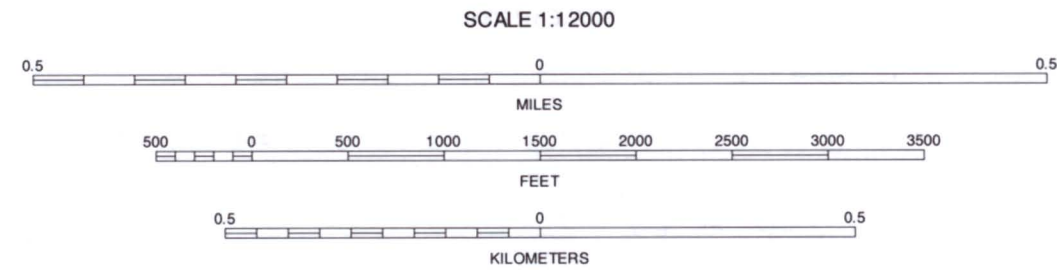
INDEX TO ADJOINING 3.75 MINUTE MAPS

CATARACT NW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 3 OF 40



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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000 meter tics: Universal Transverse Mercator, zone 16. Coordinate grid tics and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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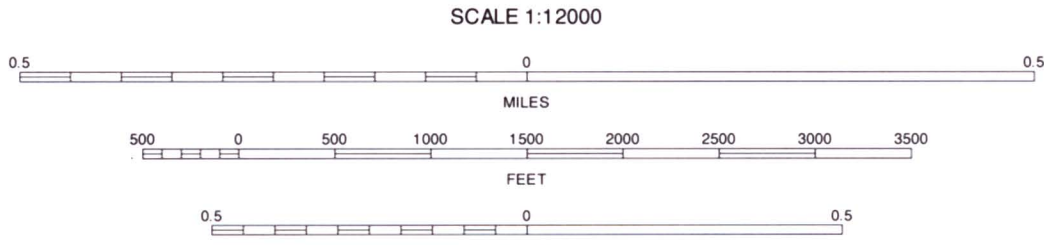
INDEX TO ADJOINING 3.75 MAPS

CATARACT NE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 4 OF 40



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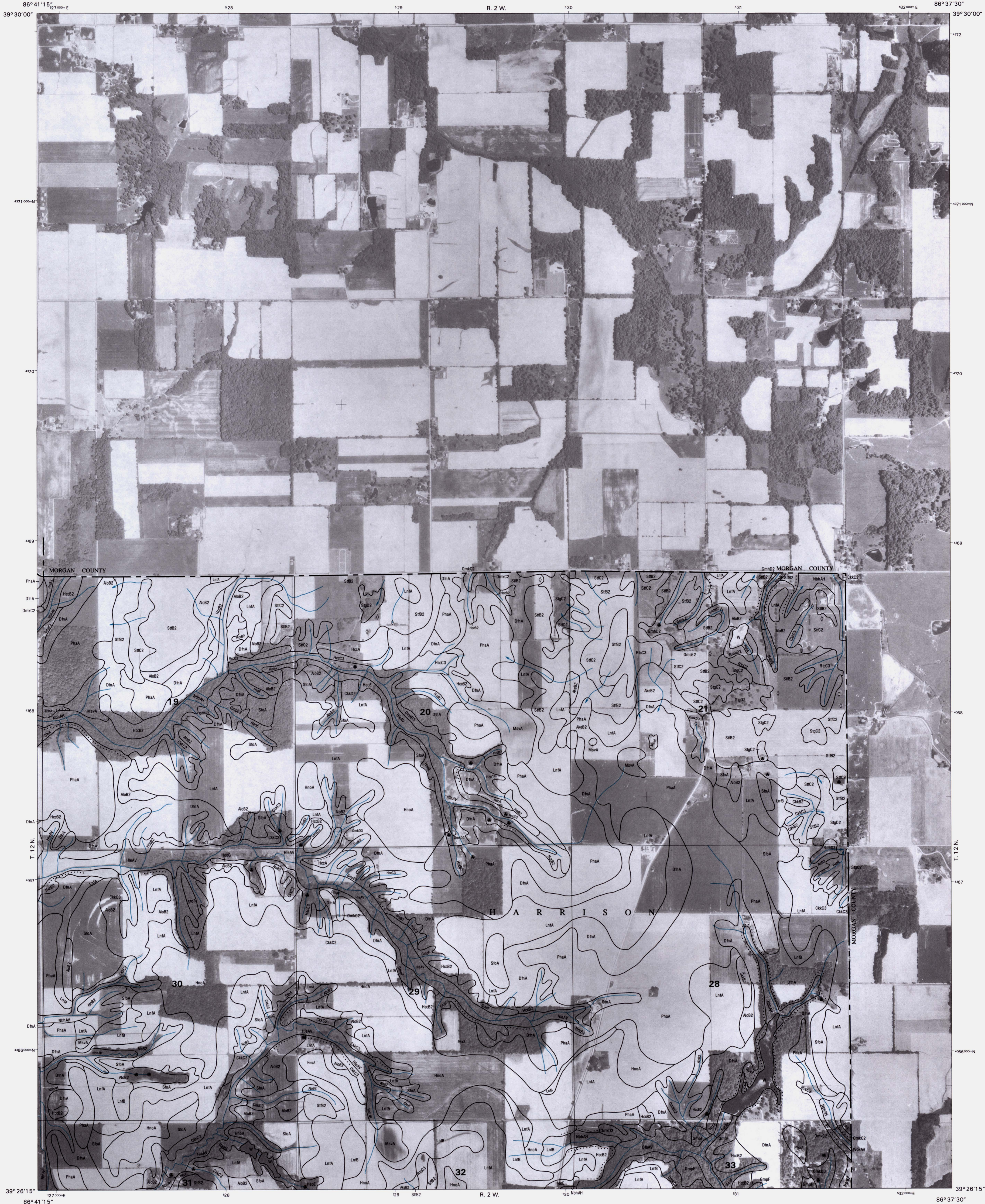
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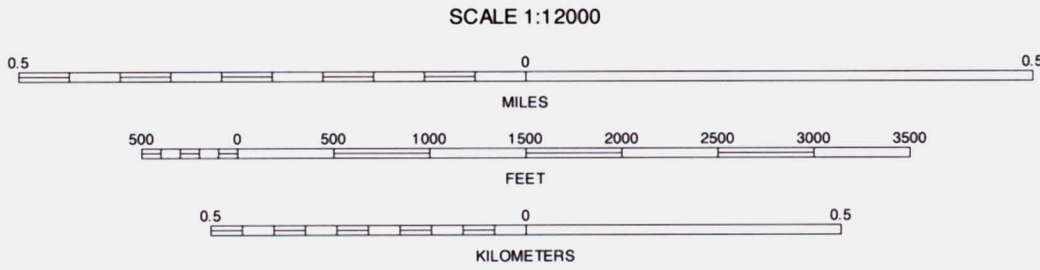
INDEX TO ADJOINING 3.75 MAPS

QUINCY NW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 5 OF 40



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter UTM Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	6
7	8	9

INDEX TO ADJOINING 3.75 MINUTE MAPS

1 EMINENCE SW (PUTNAM COUNTY)
2 EMINENCE SE (MORGAN COUNTY)
3 HALL SW (MORGAN COUNTY)
4 QUINCY NW (SHEET 5)
5 PARAGON NW (MORGAN COUNTY)
6 QUINCY SW (SHEET 11)
7 QUINCY SE (SHEET 12)
8 PARAGON SW (MORGAN COUNTY)

QUINCY NE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 6 OF 40



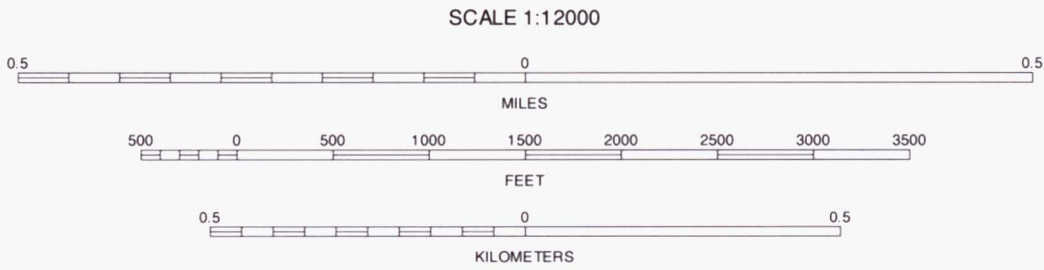
This soil survey was compiled by the U. S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U. S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U. S. Department of Interior, Geological Survey topographic maps.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter ics Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



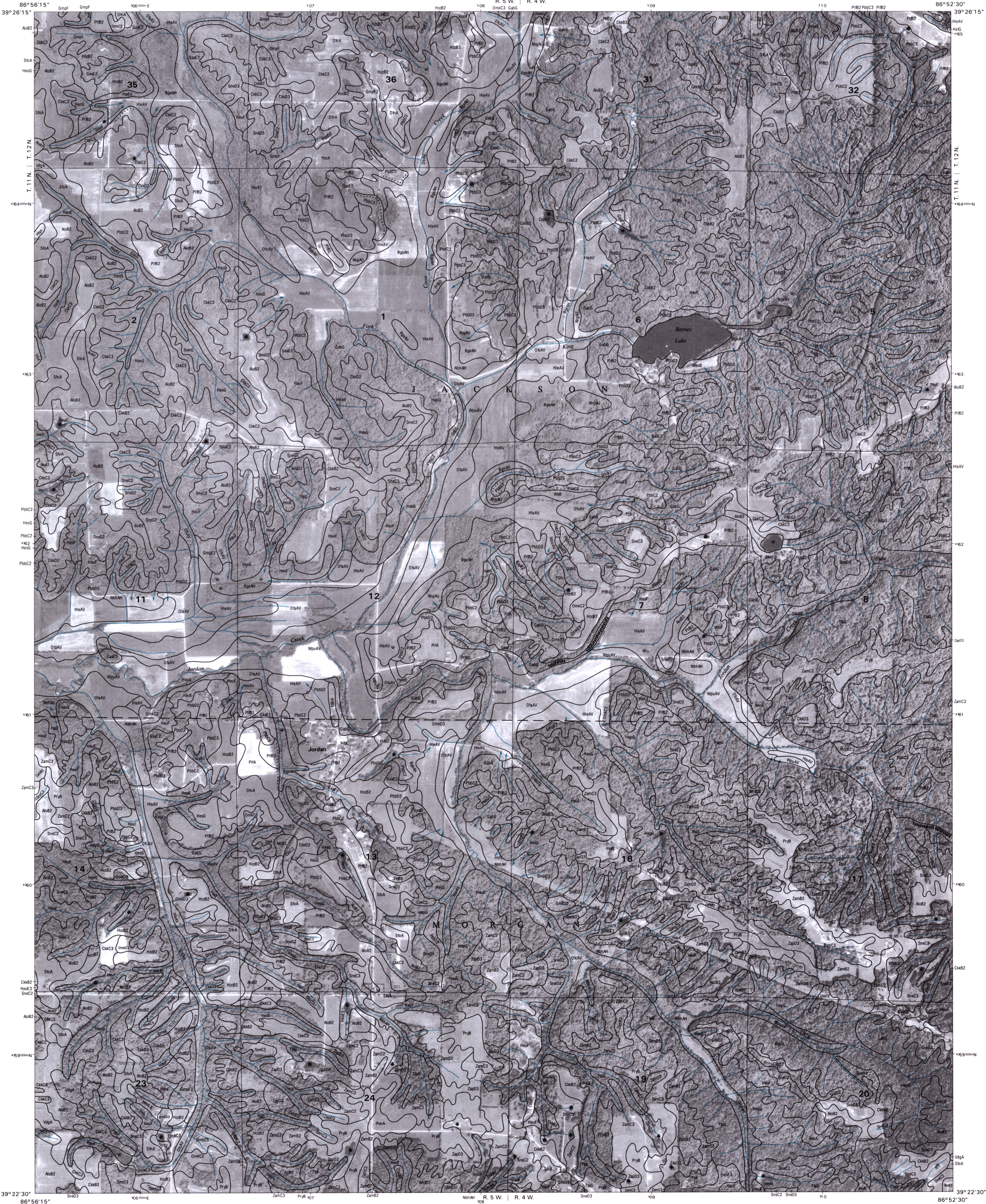
QUARTER QUADRANGLE
LOCATION



1	2	3
4	5	6
7	8	9

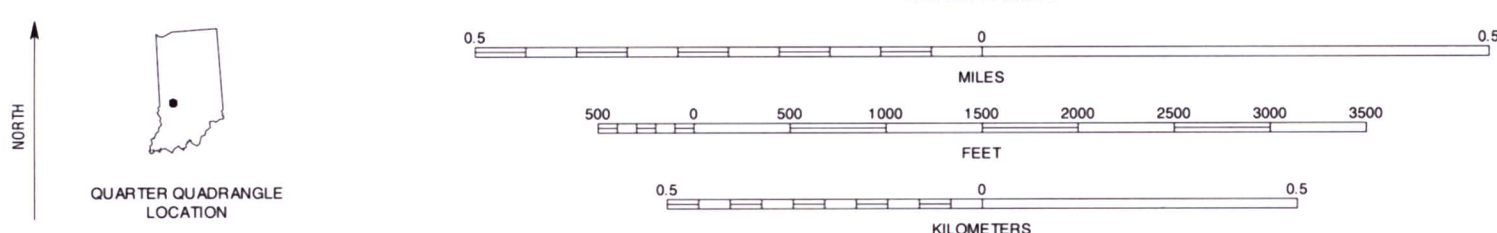
INDEX TO ADJOINING 3.75 MAPS

POLAND SW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 7 OF 40



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U.S. Department of Interior, Geological Survey topographic maps.

North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000 meter UTM Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	6
7	8	9

INDEX TO ADJOINING 3.75 MAPS

POLAND SE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 8 OF 40

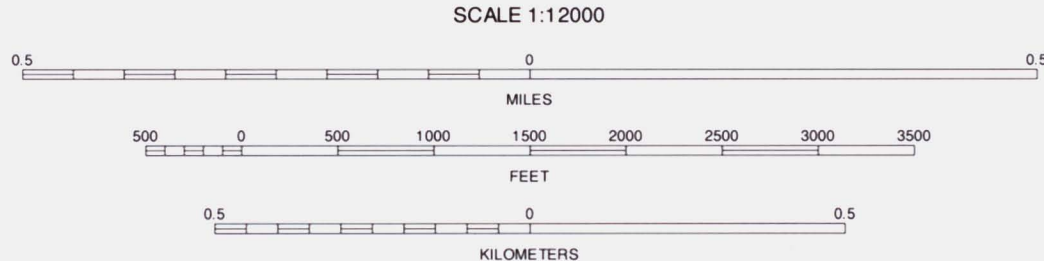


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U.S. Department of Interior, Geological Survey topographic maps.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION



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4	5	
6	7	8

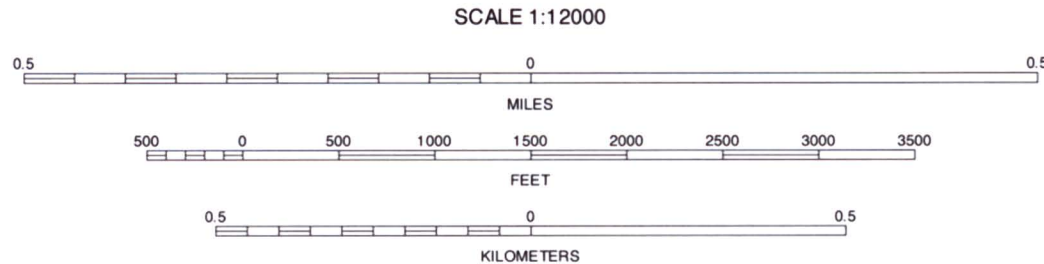
INDEX TO ADJOINING 3.75 MINUTE MAPS

CATARACT SW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 9 OF 40



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U.S. Department of Interior, Geological Survey topographic maps.

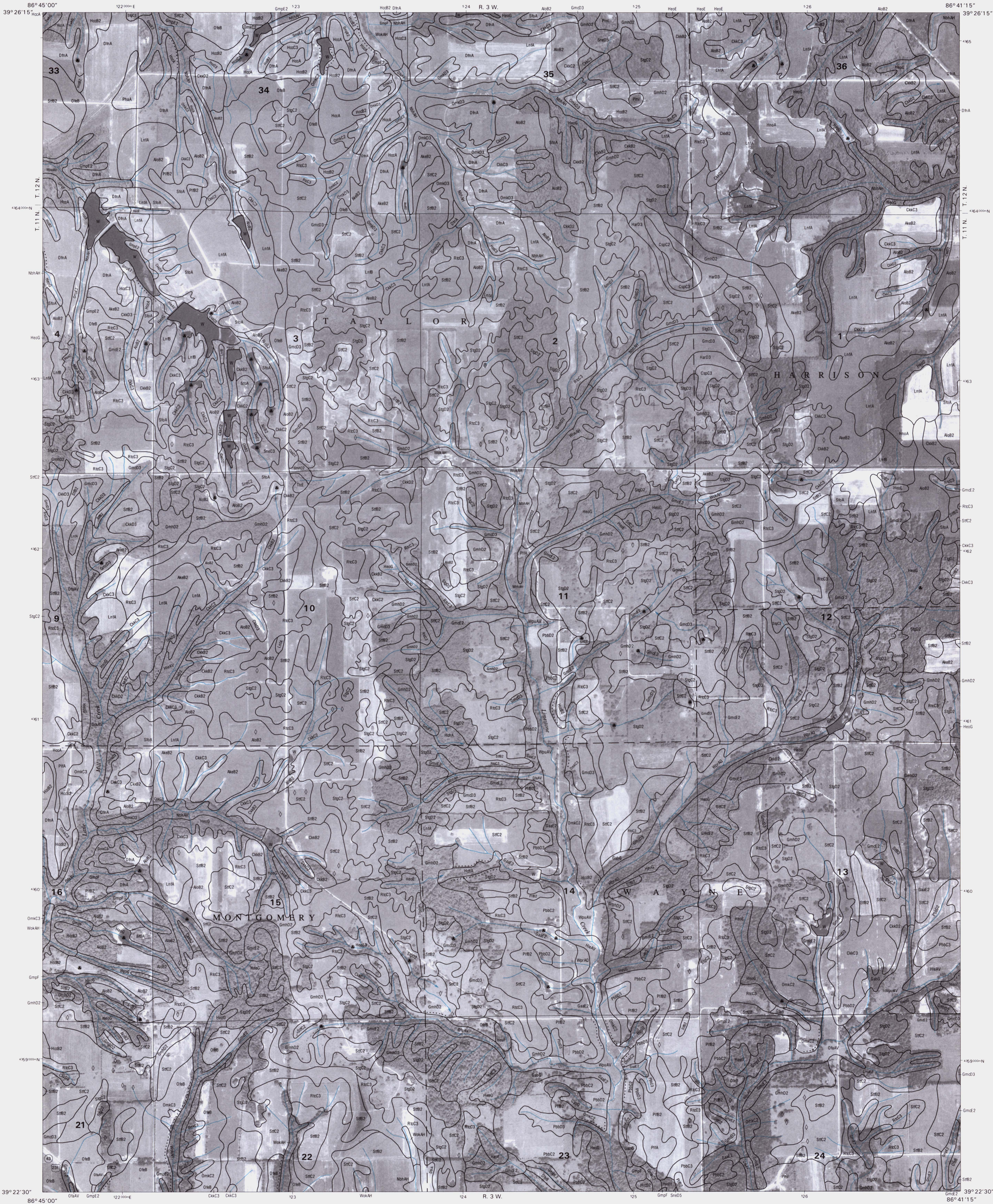
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter UTM. Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	6
7	8	9

CATARACT SE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 10 OF 40

- 1 CATARACT NW (SHEET 3)
- 2 CATARACT NE (SHEET 4)
- 3 QUINCY NW (SHEET 5)
- 4 CATARACT SW (SHEET 9)
- 5 QUINCY SW (SHEET 11)
- 6 SPENCER NW (SHEET 16)
- 7 SPENCER NE (SHEET 17)
- 8 GOSPORT NW (SHEET 18)

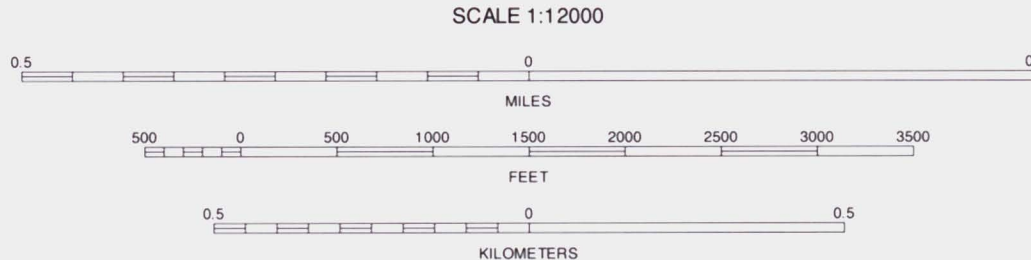


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U.S. Department of Interior, Geological Survey topographic maps.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter ties. Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE
LOCATION



1	2	3
4	5	6
7	8	9

- 1 CATARACT NE (SHEET 4)
- 2 QUINCY NW (SHEET 5)
- 3 QUINCY NE (SHEET 6)
- 4 CATARACT SE (SHEET 10)
- 5 QUINCY SE (SHEET 12)
- 6 SPENCER NE (SHEET 17)
- 7 GOSPORT NW (SHEET 18)
- 8 GOSPORT NE (SHEET 19)

INDEX TO ADJOINING 3.75 MAPS

QUINCY SW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 11 OF 40

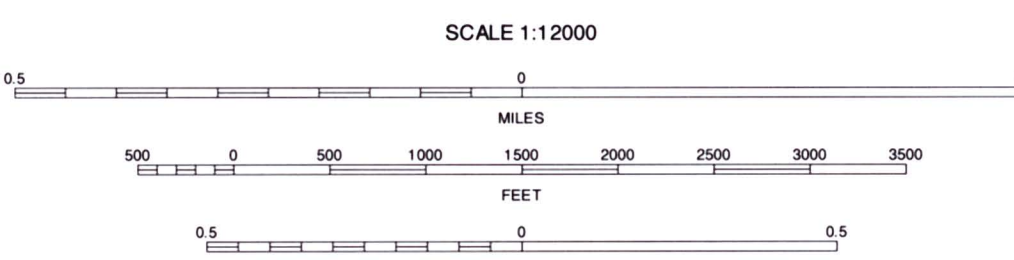


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U.S. Department of Interior, Geological Survey topographic maps.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter tics: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE
LOCATION



1	2	3
4	5	6
7	8	9

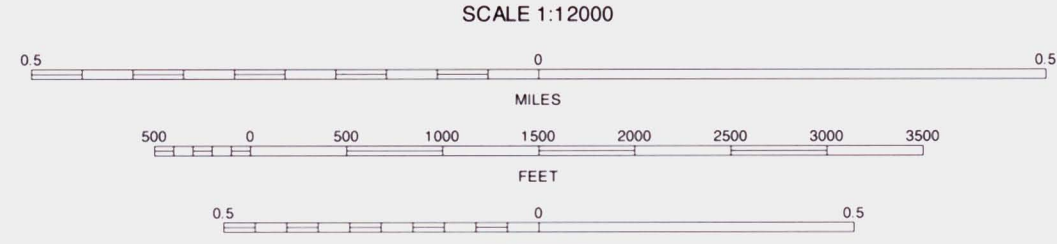
INDEX TO ADJOINING 3.75 MINUTE MAPS

QUINCY SE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 12 OF 40



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U.S. Department of Interior, Geological Survey topographic maps.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter ties. Universal Transverse Mercator, zone 18. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	
6	7	8

CLAY CITY NE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 13 OF 40

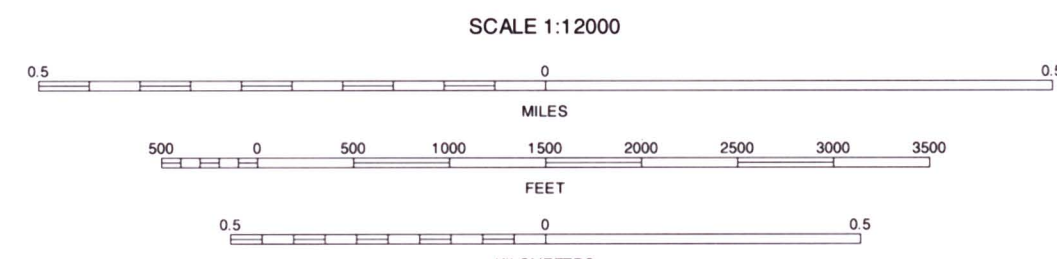
- 1 CENTER POINT SW (CLAY COUNTY)
- 2 CENTER POINT SE (CLAY COUNTY)
- 3 POLAND SW (SHEET 7)
- 4 CLAY CITY NW (CLAY COUNTY)
- 5 PATRICKSBURG NW (SHEET 14)
- 6 CLAY CITY SW (CLAY COUNTY)
- 7 CLAY CITY SE (SHEET 20)
- 8 PATRICKSBURG SW (SHEET 21)

INDEX TO ADJOINING 3.75 MAPS



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U.S. Department of Interior, Geological Survey topographic maps.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter ties. Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	6
7	8	9

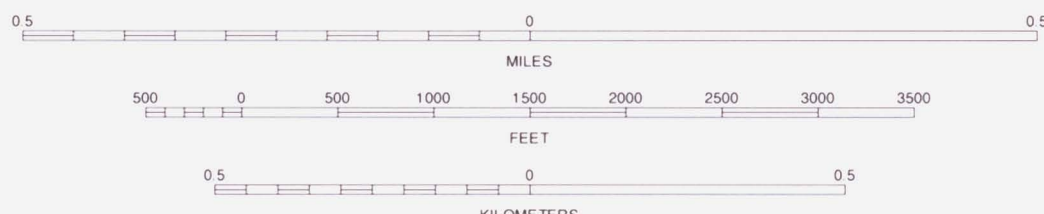
PATRICKSBURG NW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 14 OF 40

INDEX TO ADJOINING 3.75 MAPS



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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000 meter ties: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately postioned. Digital data are available for this quadrangle.



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4	5	6
7	8	9

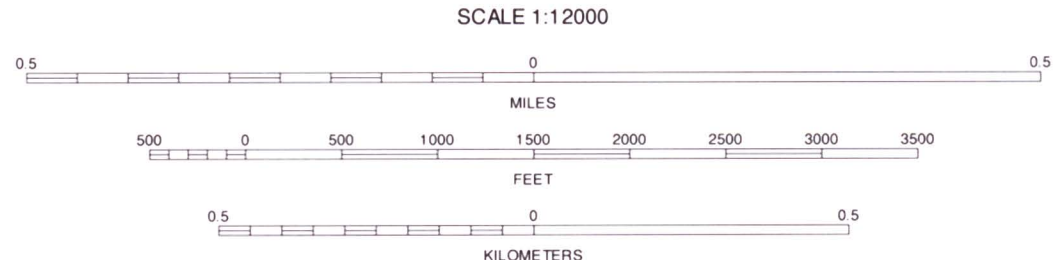
INDEX TO ADJOINING 3.75 MAPS

PATICKSBURG NE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 15 OF 40



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U.S. Department of Interior, Geological Survey topographic maps.

North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000 meter ties. Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



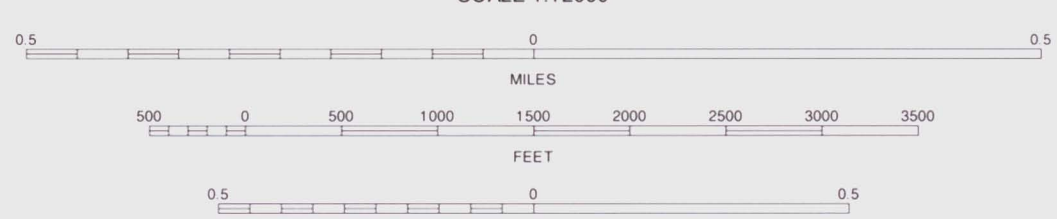
1	2	3	1 POLAND SE (SHEET 8)
4	5	2 CATARACT SW (SHEET 9)	4 PATRICKSBURG NE (SHEET 15)
6	7	8	5 SPENCER NE (SHEET 17)
			6 PATRICKSBURG SE (SHEET 22)
			7 SPENCER SW (SHEET 23)
			8 SPENCER SE (SHEET 24)

SPENCER NW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 16 OF 40



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U.S. Department of Interior, Geological Survey topographic maps.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter tics: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	6
7	8	9

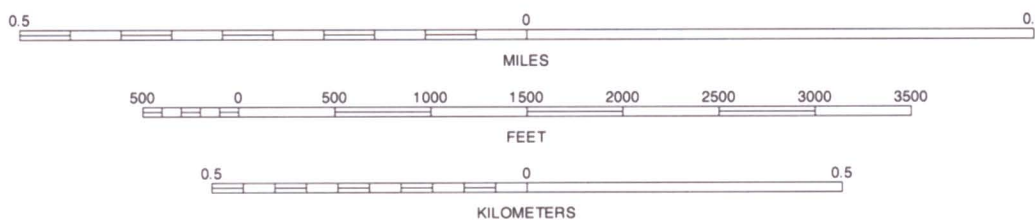
INDEX TO ADJOINING 37.5 MAPS

SPENCER NE, INDIANA
37.5 MINUTE SERIES
SHEET NUMBER 17 OF 40



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U.S. Department of Interior, Geological Survey topographic maps.

North American Datum of 1983 (NAD83), GRS-80 Spheroid
1000 meter bcs: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	
6	7	8

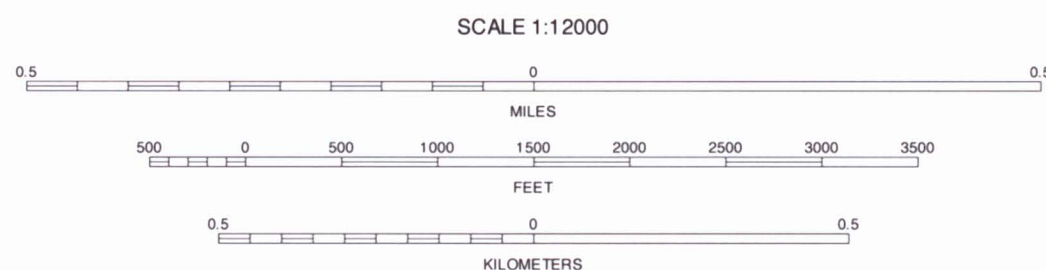
INDEX TO ADJOINING 3.75 MAPS

GOSPORT NW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 18 OF 40



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U.S. Department of Interior, Geological Survey topographic maps.

North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000 meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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4	5	6
7	8	

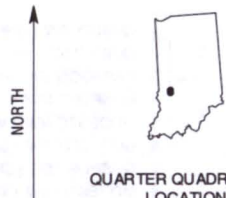
INDEX TO ADJOINING 3.75 MINUTE MAPS

GOSPORT NE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 19 OF 40

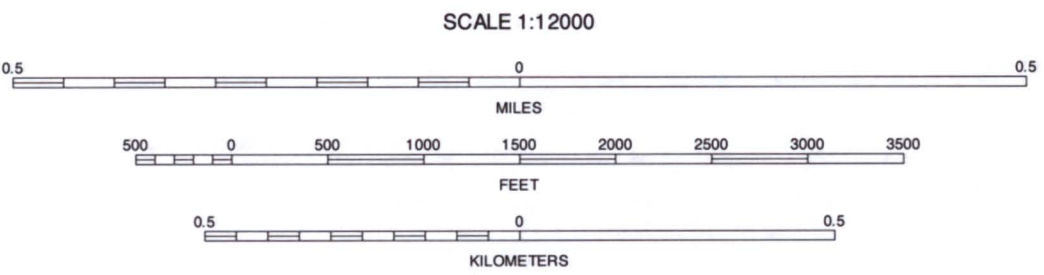


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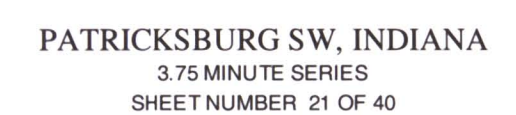
QUARTER QUADRANGLE
LOCATION



1	2	3
4	5	6
7	8	9

CLAY CITY SE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 20 OF 40

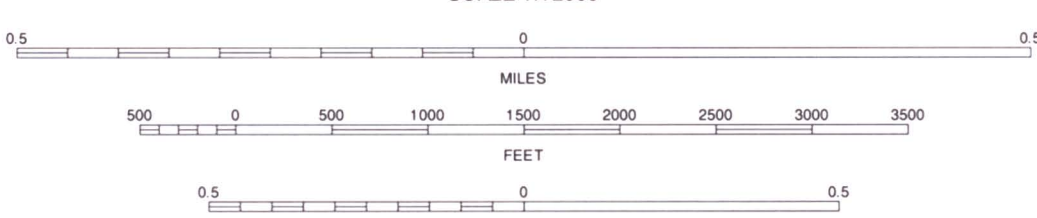
OWEN COUNTY, INDIANA
PATRICKSBURG SW QUADRANGLE
SHEET NUMBER 21 OF 40





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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter ties. Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	6
7	8	9

INDEX TO ADJOINING 3.75 MAPS

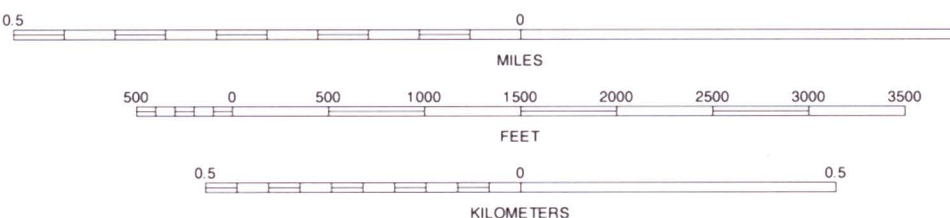
PATRICKSBURG SE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 22 OF 40

- 1 PATRICKSBURG NW (SHEET 14)
- 2 PATRICKSBURG NE (SHEET 15)
- 3 SPENCER NW (SHEET 16)
- 4 PATRICKSBURG SW (SHEET 21)
- 5 SPENCER SW (SHEET 22)
- 6 ARNEY NW (SHEET 28)
- 7 ARNEY NE (SHEET 29)
- 8 FREEDOM NW (SHEET 30)



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter ticks. Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3	1 PATRICSBURG NE (SHEET 15)
			2 SPENCER NW (SHEET 16)
			3 SPENCER NE (SHEET 17)
4		5	4 PATRICSBURG SE (SHEET 22)
			5 SPENCER SE (SHEET 24)
			6 ARNEY NE (SHEET 29)
6	7	8	7 FREEDOM NW (SHEET 30)
			8 FREEDOM NE (SHEET 31)

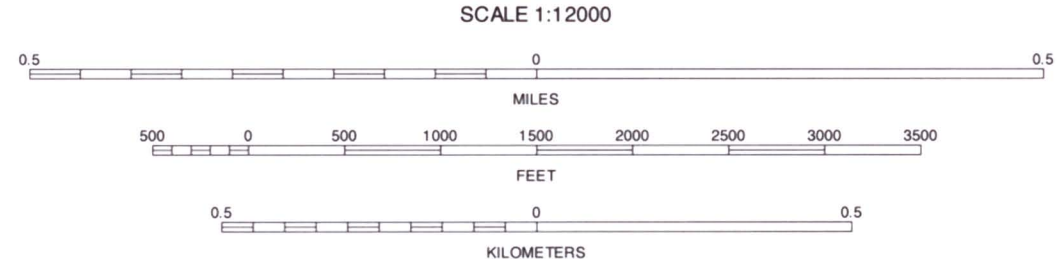
INDEX TO ADJOINING 3.75 MINUTE MAPS

SPENCER SW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 23 OF 40



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U.S. Department of Interior, Geological Survey topographic maps.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter tics: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	6
7	8	9

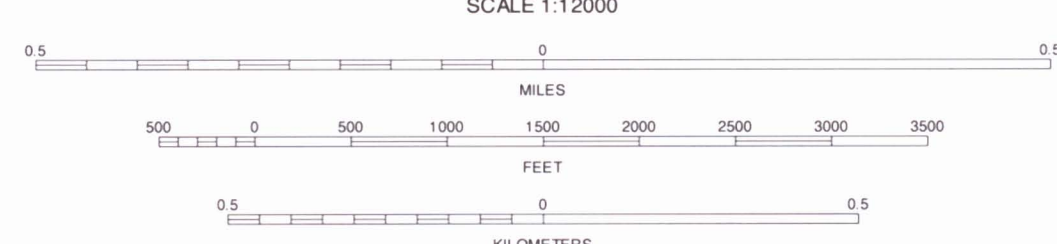
INDEX TO ADJOINING 3.75 MAPS

SPENCER SE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 24 OF 40



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U.S. Department of Interior, Geological Survey topographic maps.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter UTM Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	6
7	8	9

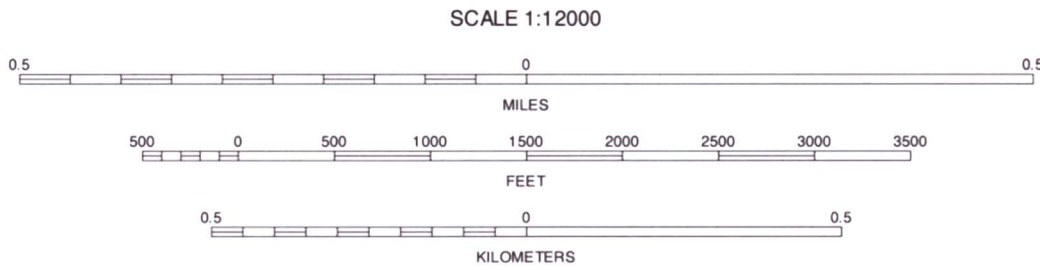
1 SPENCER NE (SHEET 17)
2 GOSPORT NW (SHEET 18)
3 GOSPORT NE (SHEET 19)
4 SPENCER SE (SHEET 24)
5 GOSPORT SE (SHEET 26)
6 FREEDOM NE (SHEET 31)
7 WHITEHALL NW (SHEET 32)
8 WHITEHALL NE (SHEET 33)

GOSPORT SW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 25 OF 40



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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000 meter ticks Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3	1 GOSPORT NW (SHEET 18)
4	5	6	2 GOSPORT NE (SHEET 19)
7	8	9	3 MODESTO NW (MONROE COUNTY)
			4 GOSPORT SW (SHEET 25)
			5 MODESTO SW (MONROE COUNTY)
			6 WHITEHALL NW (SHEET 32)
			7 WHITEHALL NE (SHEET 33)
			8 BLOOMINGTON NW (MONROE COUNTY)

INDEX TO ADJOINING 3.75 MAPS

GOSPORT SE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 26 OF 40

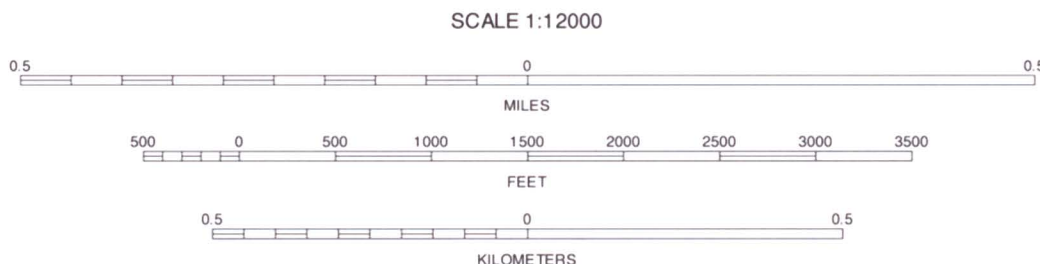


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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000 meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE
LOCATION



1	2	3
4	5	6
7	8	

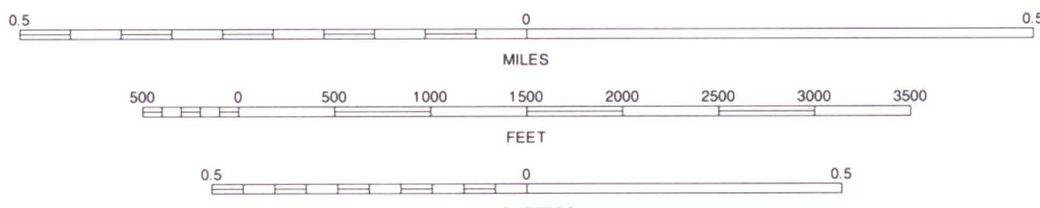
INDEX TO ADJOINING 3.75 MINUTE MAPS

COAL CITY NE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 27 OF 40



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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000 meter UTM, Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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4	5	6
7	8	9

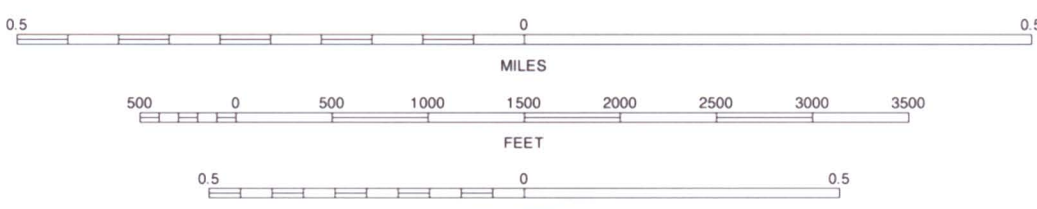
ARNEY NW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 28 OF 40

- 1 CLAY CITY SE (SHEET 20)
- 2 PATRICKSBURG SW (SHEET 21)
- 3 PATRICKSBURG SE (SHEET 22)
- 4 COAL CITY NE (SHEET 27)
- 5 ARNEY NE (SHEET 29)
- 6 COAL CITY SE (SHEET 34)
- 7 ARNEY SW (SHEET 35)
- 8 ARNEY SE (SHEET 36)



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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000 meter ties Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	6
7	8	9

INDEX TO ADJOINING 3.75 MAPS

ARNEY NE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 29 OF 40

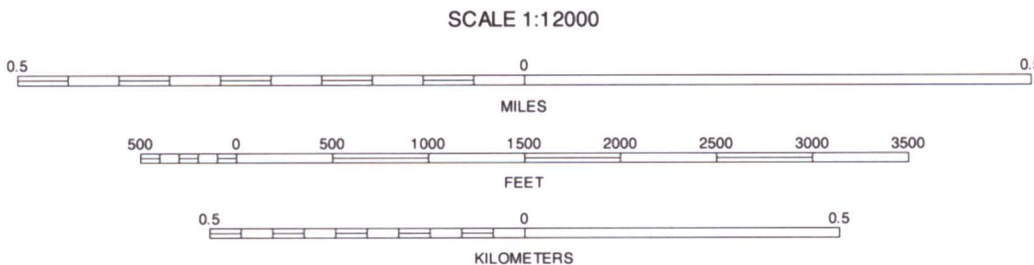


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U.S. Department of Interior, Geological Survey topographic maps.

North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000 meter ties: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



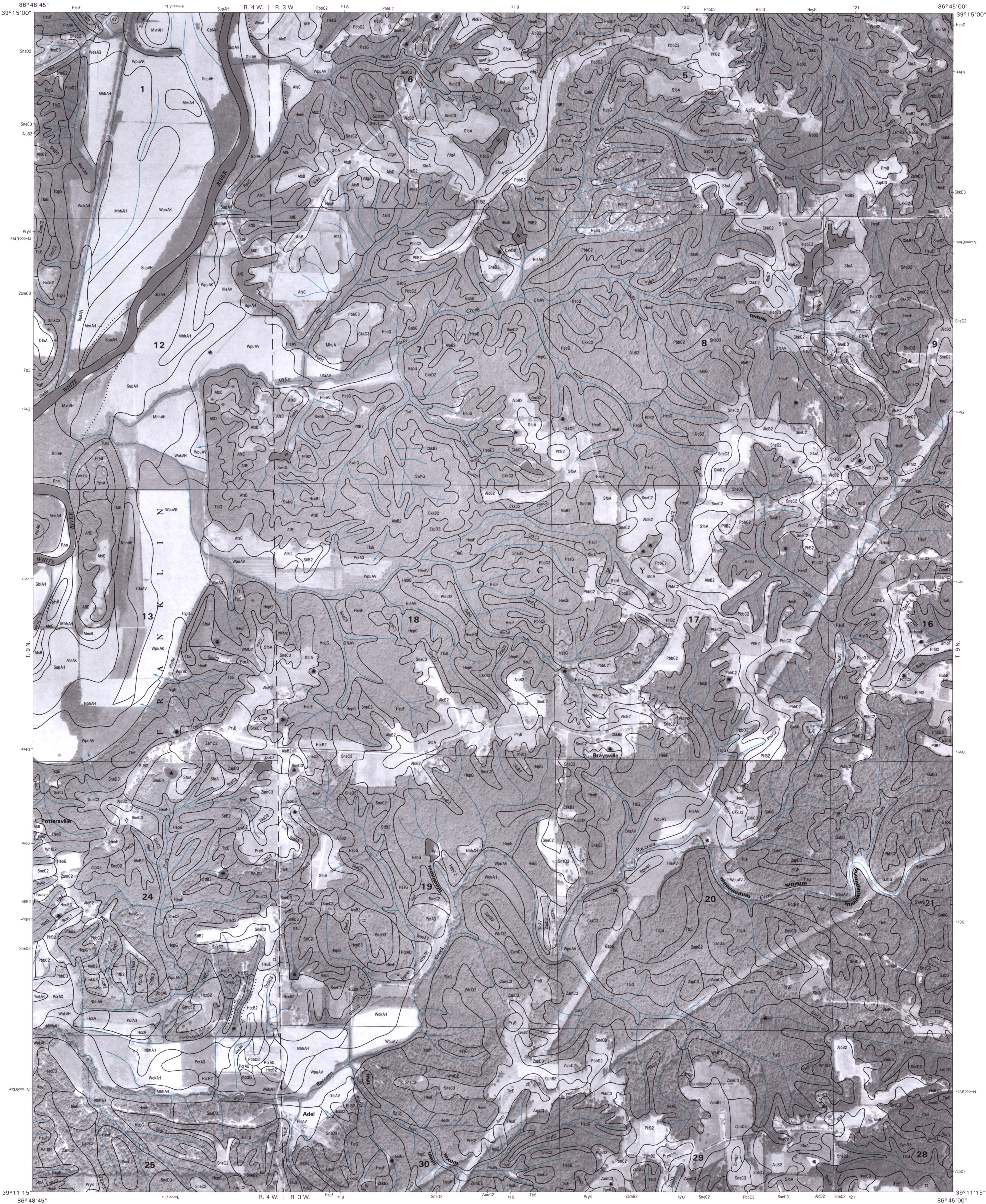
QUARTER QUADRANGLE
LOCATION



1	2	3	1 PATTERSBURG SE (SHEET 22)
4	5	6	2 SPENCER SW (SHEET 23)
7	8	9	3 SPENCER SE (SHEET 24)
			4 ARNEY NE (SHEET 25)
			5 FREEDOM NE (SHEET 31)
			6 ARNEY SE (SHEET 36)
			7 FREEDOM SW (SHEET 37)
			8 FREEDOM SE (SHEET 38)

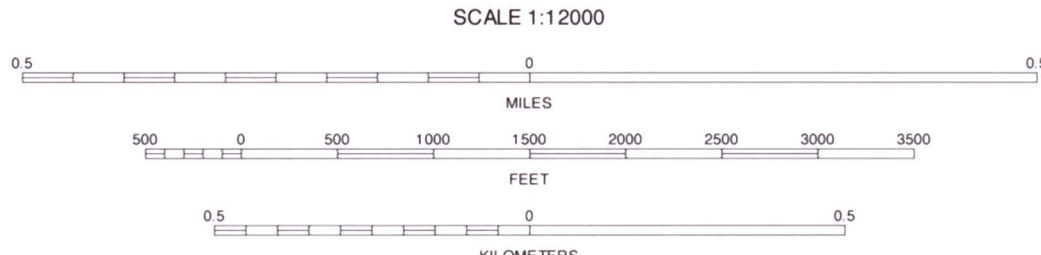
INDEX TO ADJOINING 3.75 MAPS

FREEDOM NW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 30 OF 40



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey from 1987 aerial photography. Cultural information was derived from U.S. Department of Interior, Geological Survey topographic maps.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter ties: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	6
7	8	9

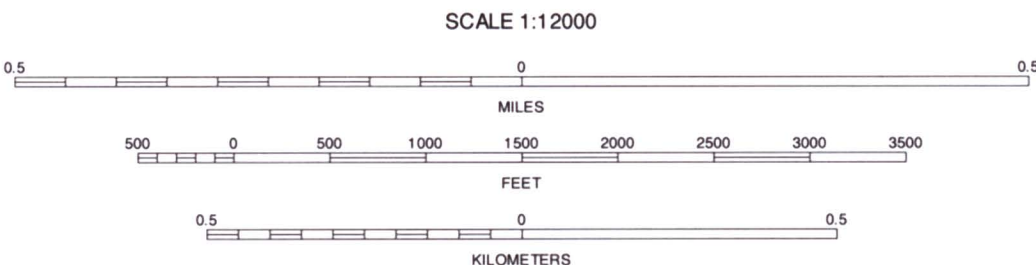
FREEDOM NE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 31 OF 40

- 1 SPENCER SW (SHEET 23)
- 2 SPENCER SE (SHEET 24)
- 3 GOSPORT SW (SHEET 25)
- 4 FREEDOM NW (SHEET 30)
- 5 WHITEHALL NW (SHEET 32)
- 6 FREEDOM SW (SHEET 37)
- 7 FREEDOM SE (SHEET 38)
- 8 WHITEHALL SW (SHEET 39)



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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000 meter UTM, Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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4	5	6
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INDEX TO ADJOINING 3.75 MAPS

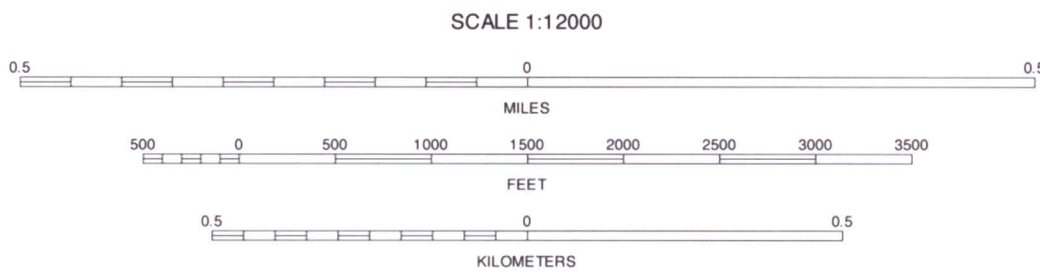
WHITEHALL NW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 32 OF 40

- 1 SPENCER SE (SHEET 24)
- 2 GOSPORT SW (SHEET 25)
- 3 GOSPORT SE (SHEET 26)
- 4 FREEDOM NE (SHEET 31)
- 5 WHITEHALL NE (SHEET 33)
- 6 FREEDOM SE (SHEET 38)
- 7 WHITEHALL SW (SHEET 39)
- 8 WHITEHALL SE (SHEET 40)



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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000 meter fcs: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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4	5	6
7	8	9

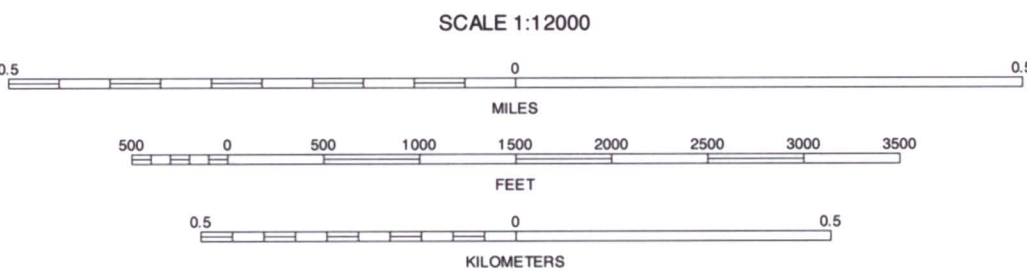
INDEX TO ADJOINING 3.75 MAPS

WHITEHALL NE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 33 OF 40



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter ties. Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	6
7	8	

1 COAL CITY NW (CLAY COUNTY)
2 COAL CITY NE (SHEET 27)
3 ARNEY NW (SHEET 28)
4 COAL CITY SW (CLAY COUNTY)
5 ARNEY SW (SHEET 35)
6 SWITZ CITY NW (GREENE COUNTY)
7 SWITZ CITY NE (GREENE COUNTY)
8 BLOOMFIELD NW (GREENE COUNTY)

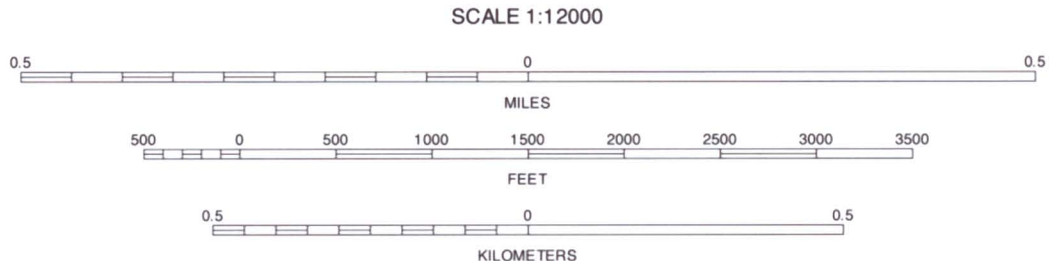
INDEX TO ADJOINING 3.75 MAPS

COAL CITY SE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 34 OF 40



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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000 meter tics: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3	1 COAL CITY NE (SHEET 27)
4	5	2 ARNEY NW (SHEET 28)	3 ARNEY NE (SHEET 29)
6	7	4 COAL CITY SE (SHEET 34)	5 ARNEY SE (SHEET 36)
		6 SWITZ CITY NE (GREENE COUNTY)	7 BLOOMFIELD NW (GREENE COUNTY)
		8 BLOOMFIELD NE (GREENE COUNTY)	8 BLOOMFIELD SE (GREENE COUNTY)

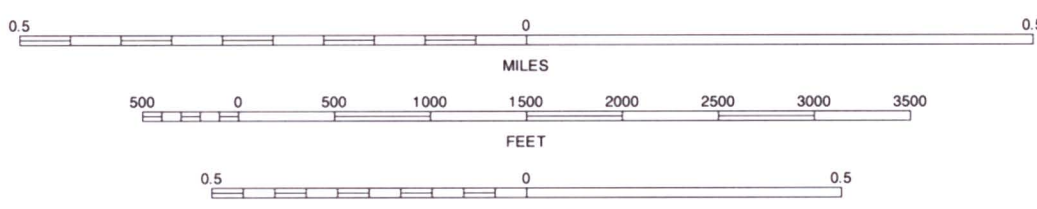
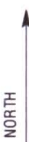
INDEX TO ADJOINING 3.75 MINUTE MAPS

ARNEY SW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 35 OF 40



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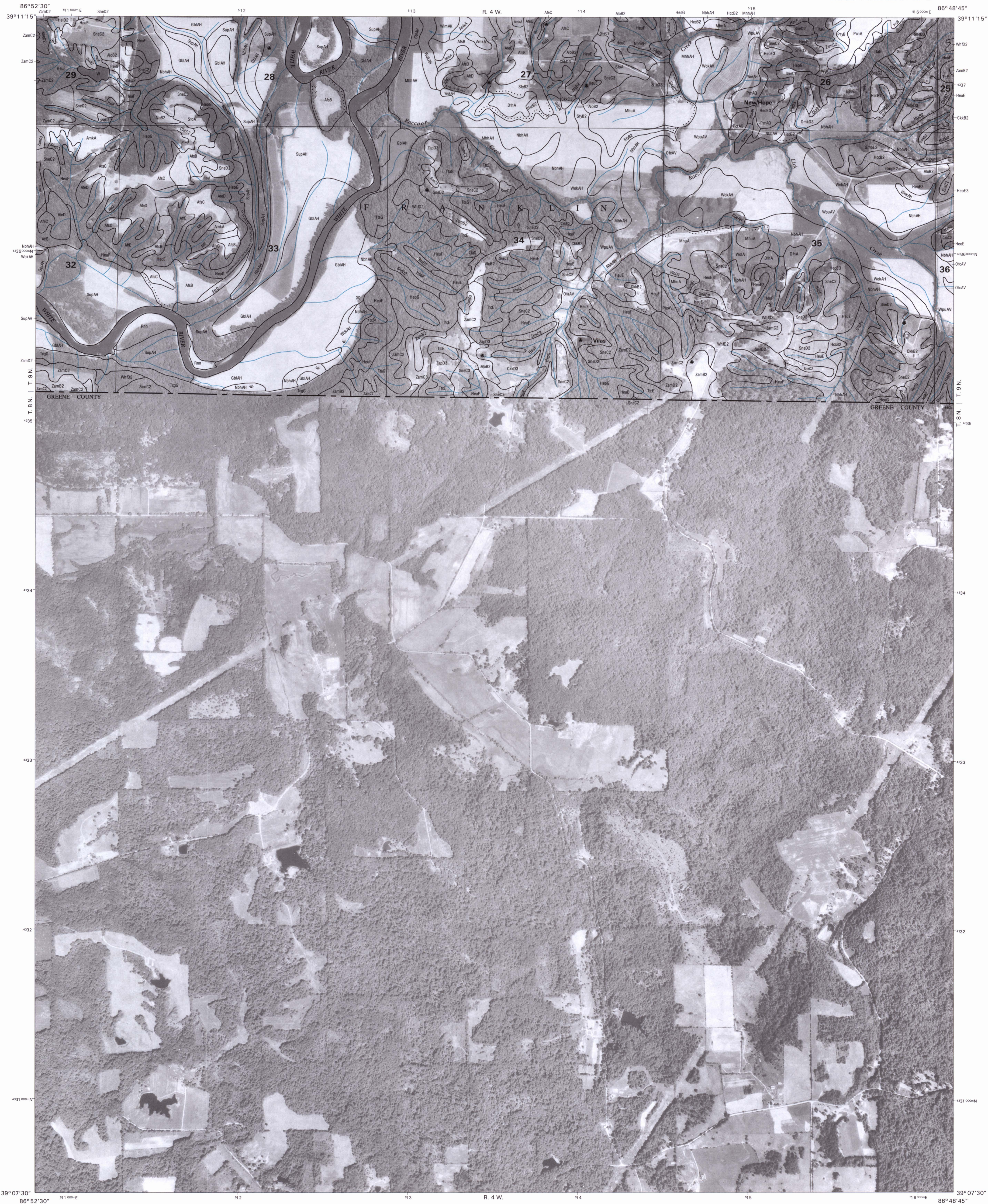
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3	1 ARNEY NW (SHEET 28)
			2 ARNEY NE (SHEET 29)
			3 FREEDOM NW (SHEET 30)
4		5	4 ARNEY SW (SHEET 35)
			5 FREEDOM SW (SHEET 37)
			6 BLOOMFIELD NW (GREENE COUNTY)
			7 BLOOMFIELD NE (GREENE COUNTY)
6	7	8	8 SOLSBERRY NW (GREENE COUNTY)

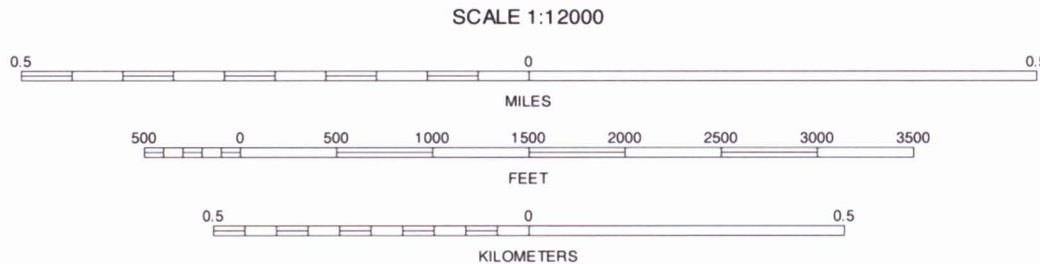
INDEX TO ADJOINING 3.75 MAPS

ARNEY SE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 36 OF 40



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter ticks. Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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4	5	6
7	8	

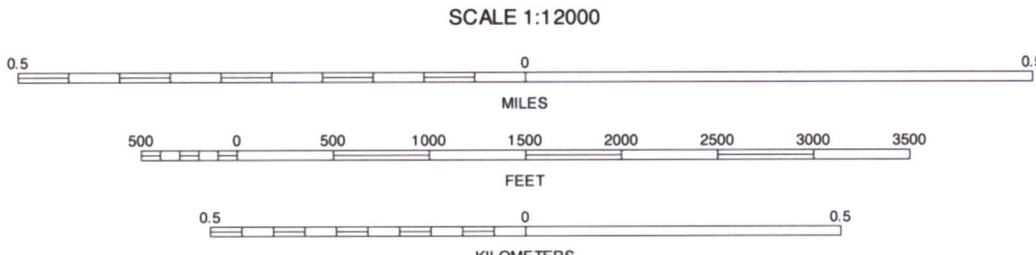
INDEX TO ADJOINING 3.75 MAPS

FREEDOM SW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 37 OF 40



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North American Datum of 1983 (NAD83), GRS-80 Spheroid
1000 meter tics: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



1	2	3
4	5	6
7	8	9

INDEX TO ADJOINING 3.75 MAPS

FREEDOM SE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 38 OF 40



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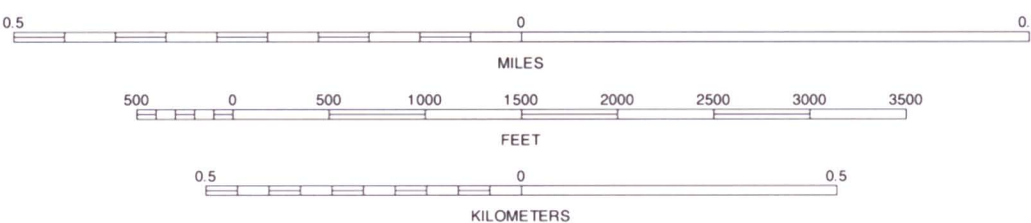
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000 meter ics: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE
LOCATION

SCALE 1:12000



1	2	3	1 FREEDOM NE (SHEET 31)
			2 WHITEHALL NW (SHEET 32)
			3 WHITEHALL NE (SHEET 33)
4		5	4 FREEDOM SE (SHEET 38)
			5 WHITEHALL SE (SHEET 40)
			6 SOLSBERRY NE (GREENE COUNTY)
			7 STANFORD NW (GREENE COUNTY)
6	7	8	8 STANFORD NE (GREENE COUNTY)

INDEX TO ADJOINING 3.75 MAPS

WHITEHALL SW, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 39 OF 40



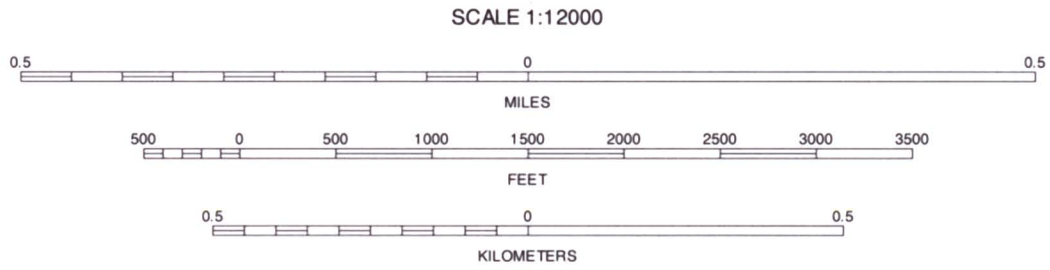
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North American Datum of 1983 (NAD83). GRS-80 Spheroid. 1000 meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE
LOCATION



1	2	3	1 WHITEHALL NW (SHEET 32)
			2 WHITEHALL NE (SHEET 33)
			3 BLOOMINGTON NW (MONROE COUNTY)
4		5	4 WHITEHALL SW (SHEET 39)
			5 BLOOMINGTON SW (MONROE COUNTY)
			6 STANFORD NW (GREENE COUNTY)
6	7	8	7 STANFORD NE (GREENE COUNTY)
			8 CLEAR CREEK NW (MONROE COUNTY)

INDEX TO ADJOINING 3.75 MAPS

WHITEHALL SE, INDIANA
3.75 MINUTE SERIES
SHEET NUMBER 40 OF 40